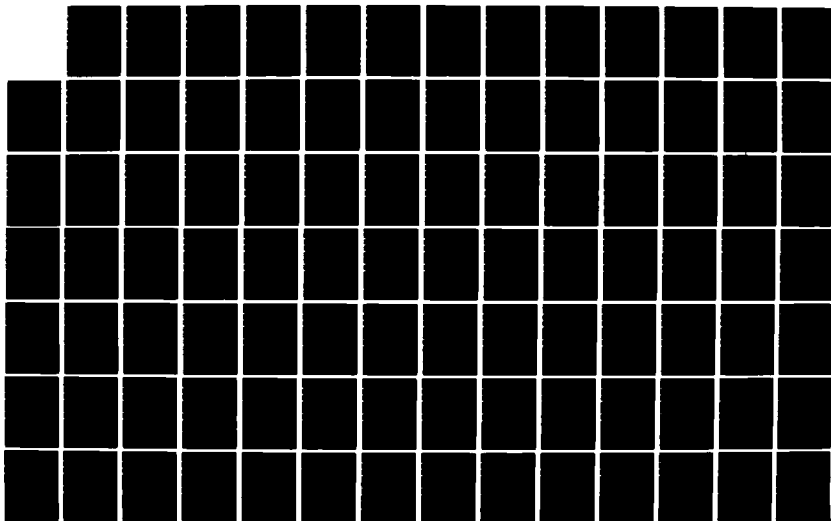
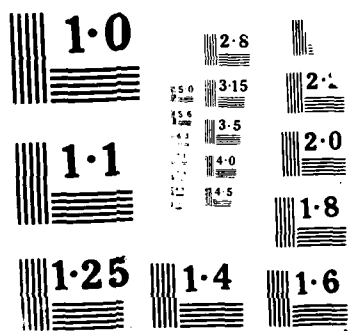
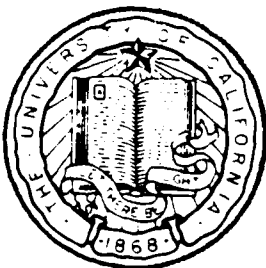


AD-A193 229 VERTICAL DIRECTIONALITY OF AMBIENT NOISE AT 32 DEG N AS 1/2  
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# MARINE PHYSICAL LABORATORY

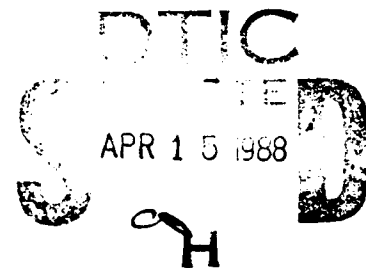
SCRIPPS INSTITUTION OF OCEANOGRAPHY

San Diego, California 92152

AD-A193 229

VERTICAL DIRECTIONALITY OF AMBIENT NOISE  
AT 32° N AS A FUNCTION OF LONGITUDE:  
Tape #86247

W. S. Hodgkiss and F. H. Fisher



MPL TECHNICAL MEMORANDUM 387-D

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January 1988

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<p>Measurements have been made of the ambient noise field between 25 and 300 Hz with vertical arrays at 32°N (124°W, 136°W, and 150°W). This technical report contains the complete analysis results for the MPL 27-element vertical array Tape #86247. The tape was recorded at 32°N, 136°W (approximately 1000 nmi due west of San Diego) on 9 May 1986 beginning at 13:38 PDT. At that time, the wind speed was 17 kts.</p>			
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22a NAME OF RESPONSIBLE INDIVIDUAL W.S. Hodgkiss		22b TELEPHONE (Include Area Code) 619-534-1798	22c OFFICE SYMBOL MPL

**Vertical Directionality of Ambient Noise**

**at 32° N as a Function of Longitude:**

**Tape #86247**

W.S. Hodgkiss and F.H. Fisher

Marine Physical Laboratory  
Scripps Institution of Oceanography  
San Diego, CA 92152

**Abstract**

Measurements have been made of the ambient noise field between 25 and 300 Hz with vertical arrays at 32° N (124° W, 136° W, and 150° W). This technical report contains the complete analysis results for the MPL 27-element vertical array Tape #86247. The tape was recorded at 32° N, 136° W (approximately 1000 nmi due west of San Diego) on 9 May 1986 beginning at 13:38 PDT. At that time, the wind speed was 17 kts.

## I. Introduction

This technical report contains the complete analysis results for the MPL 27-element vertical array Tape #86247. The tape was recorded at 32° N, 136° W (approximately 1000 nmi due west of San Diego) on 9 May 1986 beginning at 13:38 PDT. At that time, the wind speed was 17 kts.

A complete description of the experiment and data analysis procedure is given in the summary technical report (TM-387-A). Here, a brief guide will be provided to the results documented in the various sections.

Section II (Preliminary Analysis) provides a preliminary look at the data quality from 4 hydrophones spaced approximately equally across the array for the first data segment (65536 points). The results are ordered as follows:

- (1) Channel means (A/D counts).
- (2) Time series (A/D counts) for the first 1024 points of the first segment.
- (3) Time-varying mean (A/D counts, 64-point averages).
- (4) Time-varying power (A/D counts squared, 64-point averages) (channel means have been removed).
- (5) Power spectra (dB// $\mu$ Pa/ $\sqrt{\text{Hz}}$ ) (channel means have been removed).

Section III (Power Spectra) provides an extended preliminary look at the power spectra from all hydrophones in the array for the first data segment (65536 points). The results are ordered as follows:

- (1) Channel means (A/D counts).
- (2) Power spectra (dB// $\mu$ Pa/ $\sqrt{\text{Hz}}$ ) (channel means have been removed).

Section IV (Array Response: Waterfall, KB Window) provides waterfall plots of the time-evolving vertical directionality of ambient noise for successive segments (65536 points) across the entire data tape (dB// $\mu$ Pa/ $\sqrt{\text{Hz}}$ deg). A Kaiser-Bessel window ( $\alpha = 1.5$ ) was used to amplitude shade the array elements.

Section V (Array Response: Waterfall, Rect Window) provides waterfall plots of the time-evolving



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vertical directionality of ambient noise for successive segments (65536 points) across the entire data tape ( $\text{dB}/\mu\text{Pa}/\sqrt{\text{HzDeg}}$ ). A rectangular window was used to amplitude shade the array elements.

Section VI (Array Response: Panels, KB Window) provides multi-panel plots of the time-evolving vertical directionality of ambient noise for successive segments (65536 points) across the entire data tape ( $\text{dB}/\mu\text{Pa}/\sqrt{\text{HzDeg}}$ ). A Kaiser-Bessel window ( $\alpha = 1.5$ ) was used to amplitude shade the array elements.

Section VII (Array Response: Panels, Rect Window) provides multi-panel plots of the time-evolving vertical directionality of ambient noise for successive segments (65536 points) across the entire data tape ( $\text{dB}/\mu\text{Pa}/\sqrt{\text{HzDeg}}$ ). A rectangular window was used to amplitude shade the array elements.

## II. Preliminary Analysis.



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Channel #10

1 14.550003051758

Channel #20

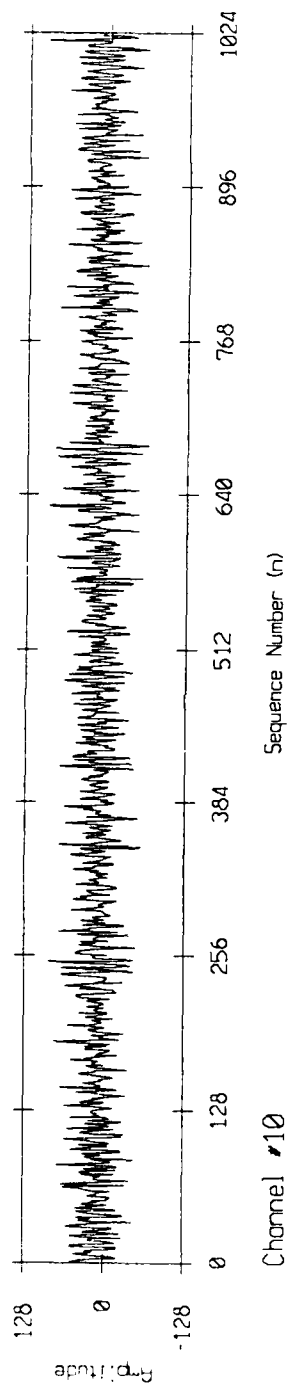
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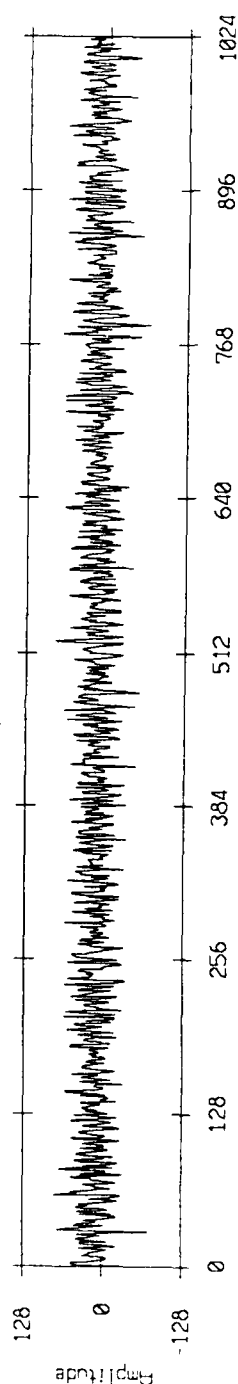
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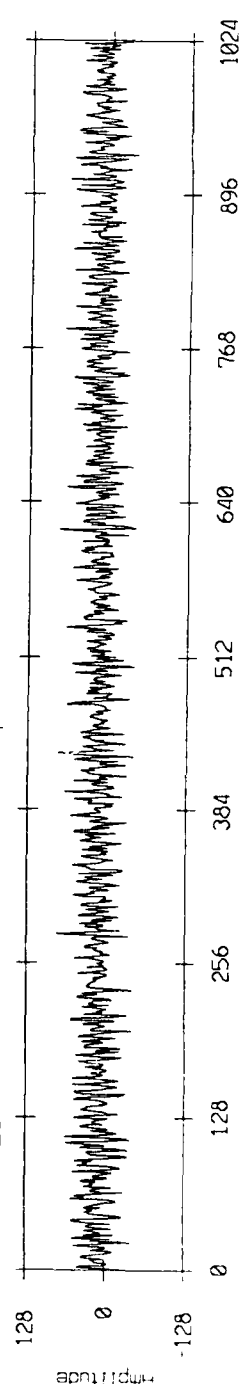
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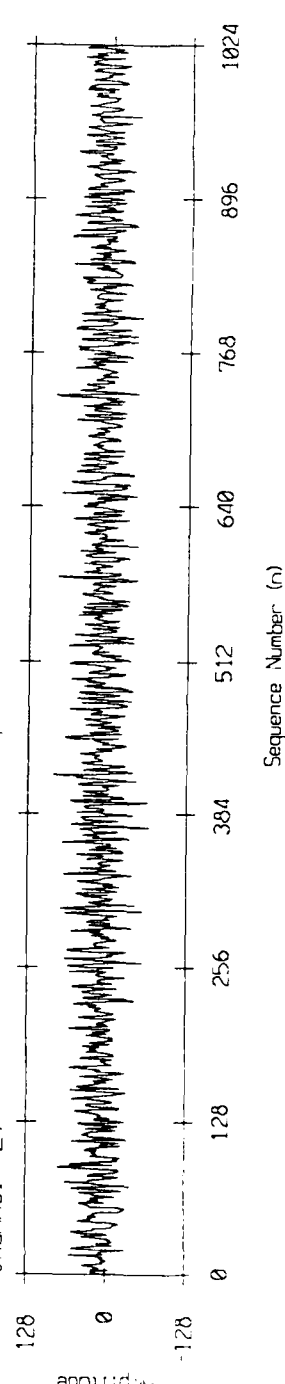
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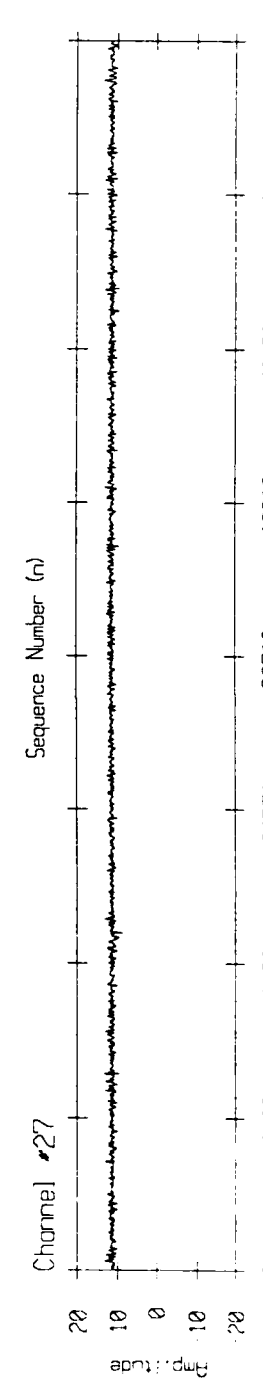
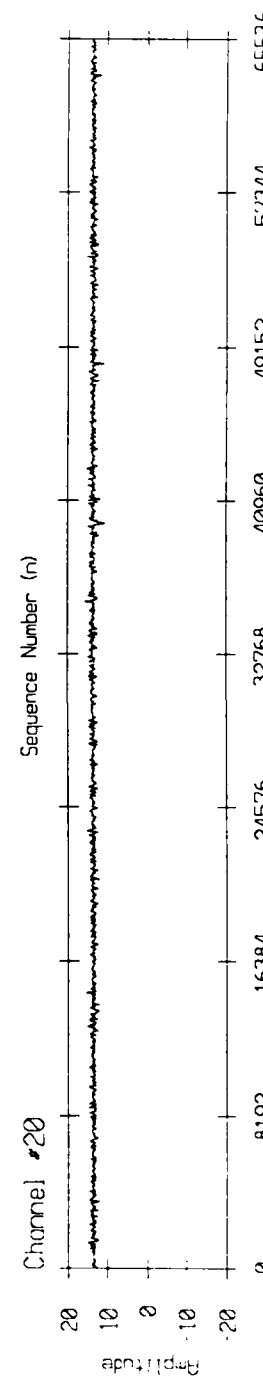
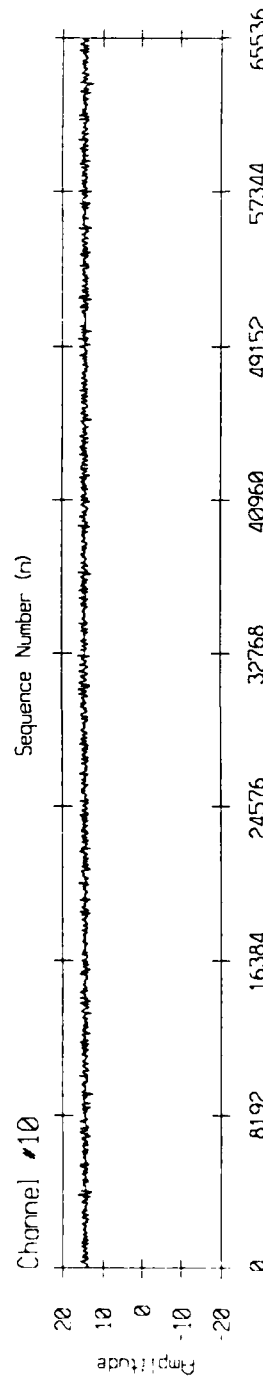
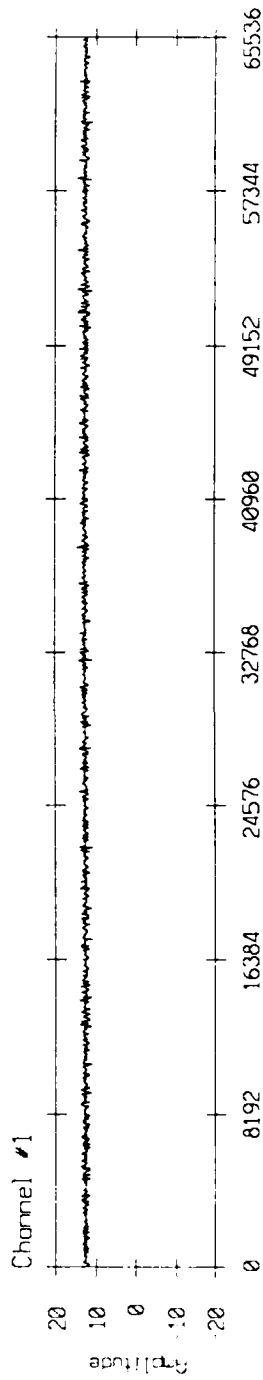
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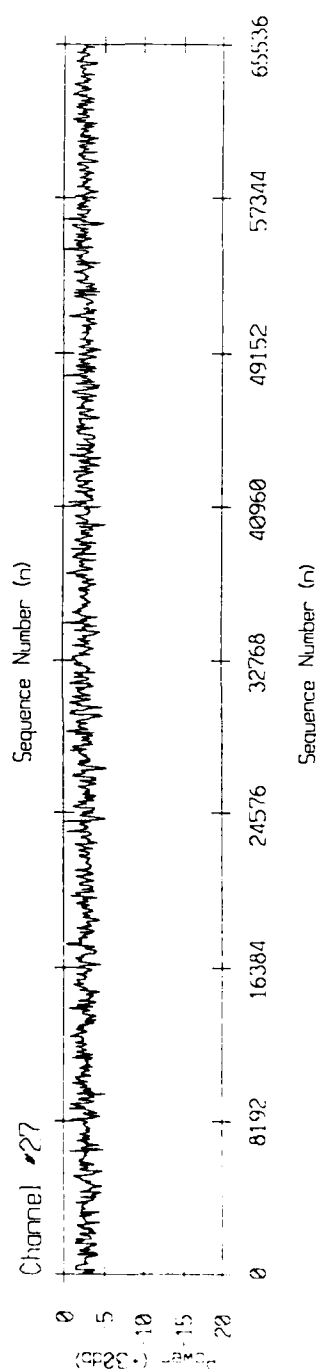
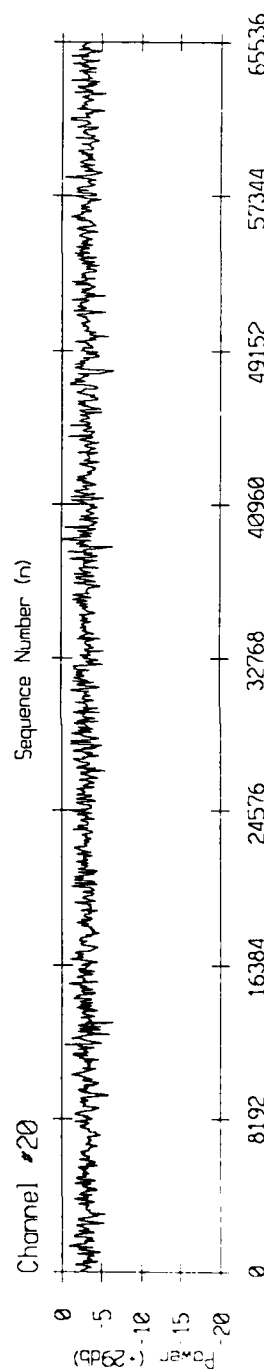
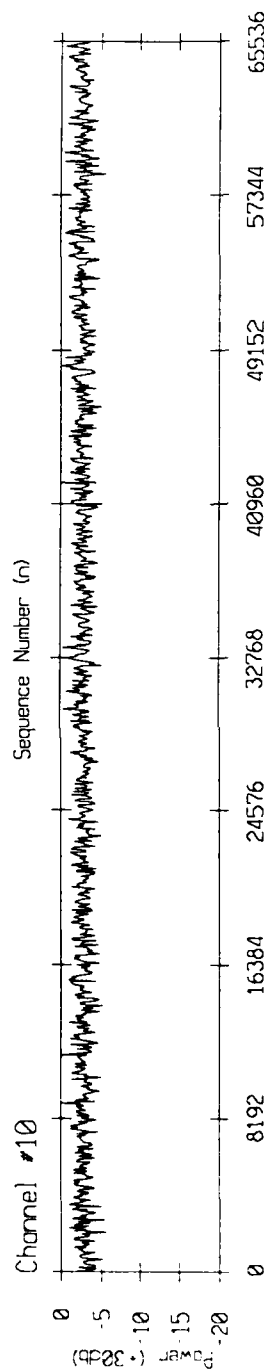
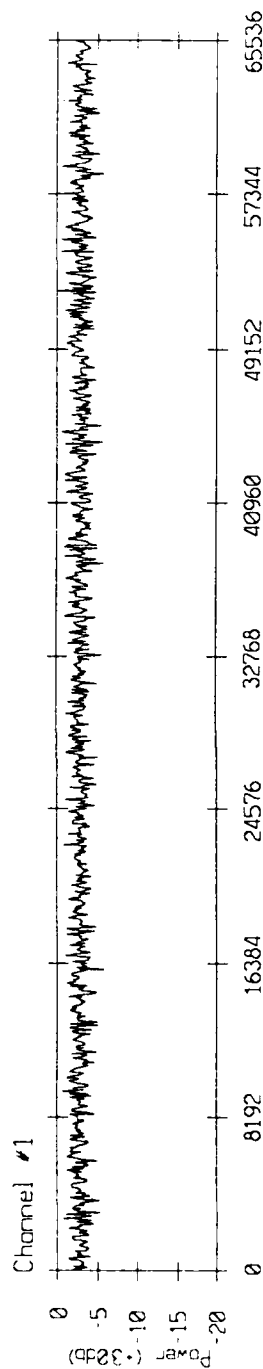
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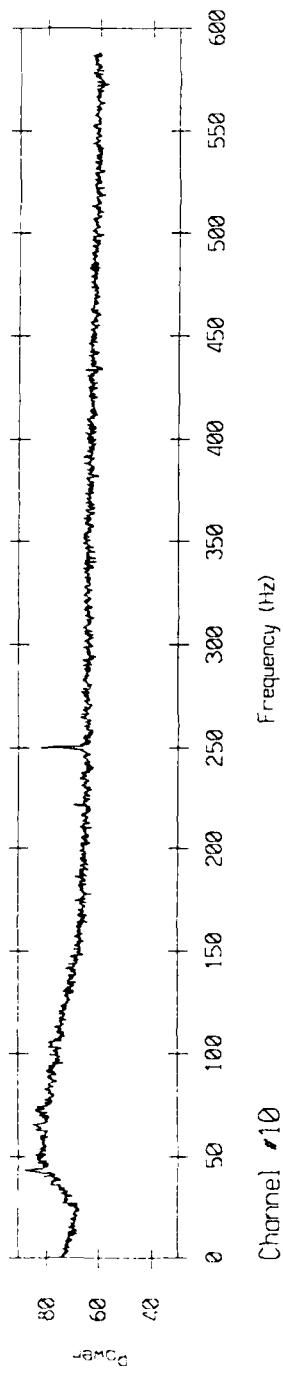


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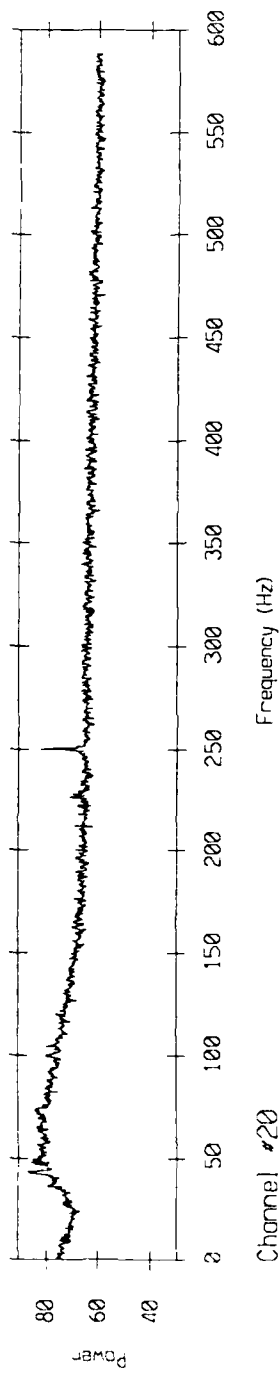


Power Spectrum 86247.1

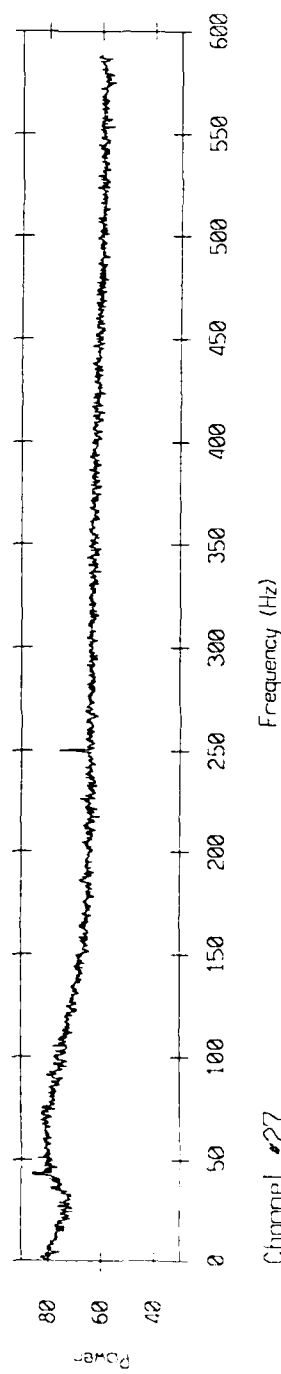
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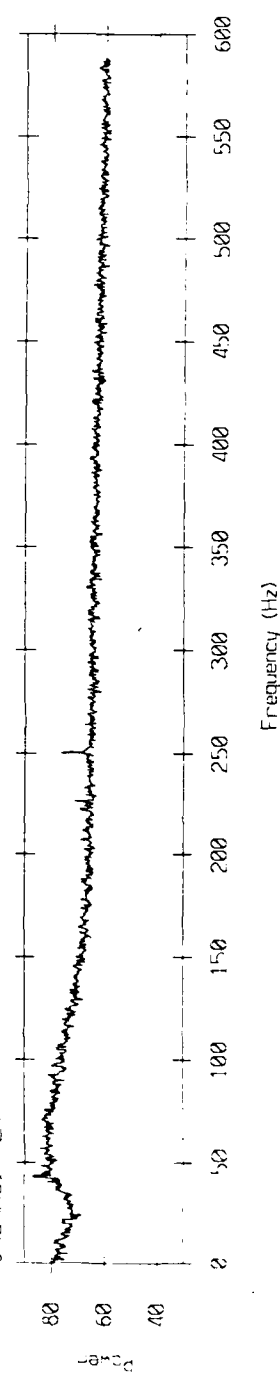
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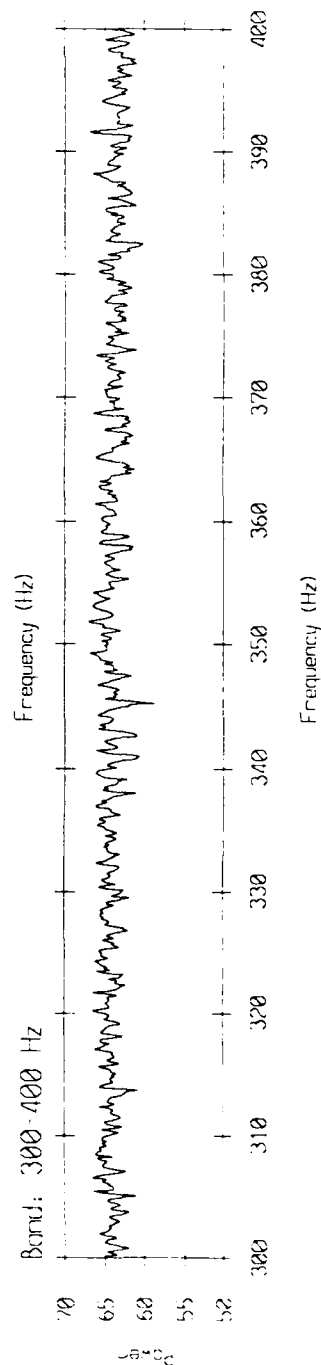
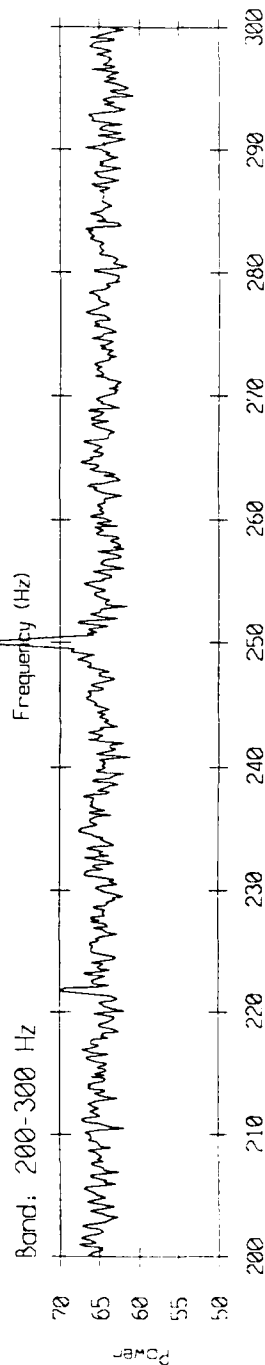
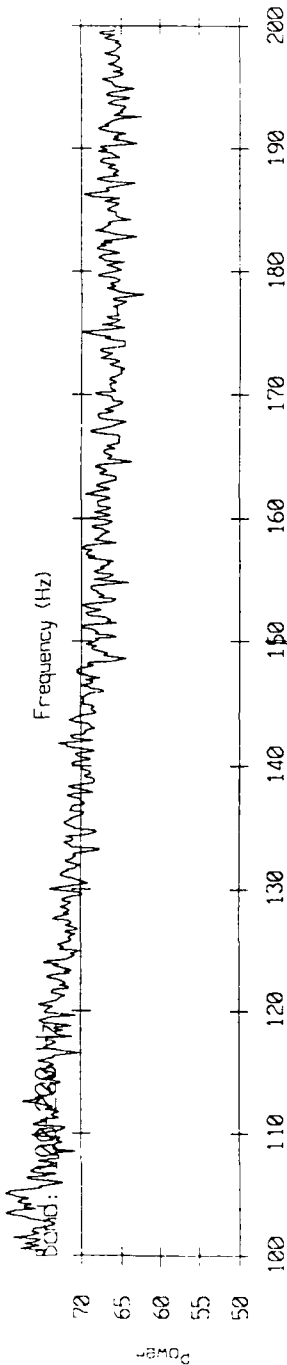
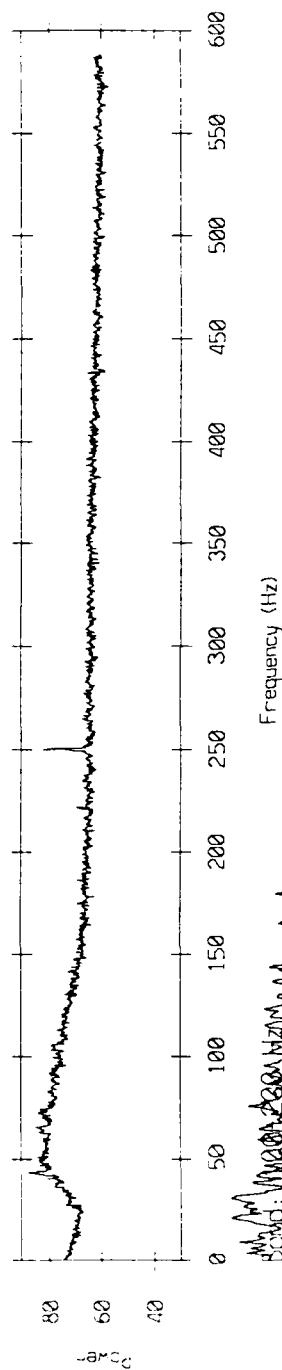


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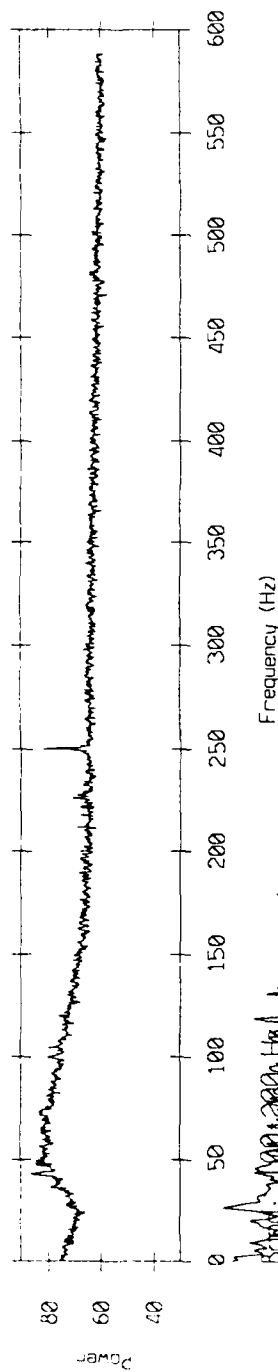
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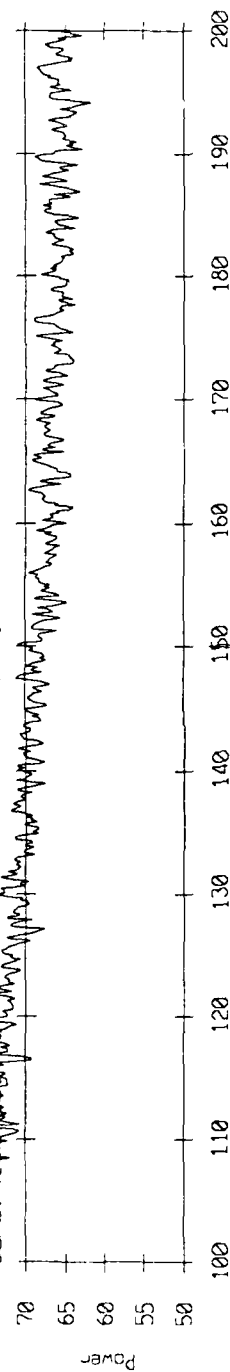


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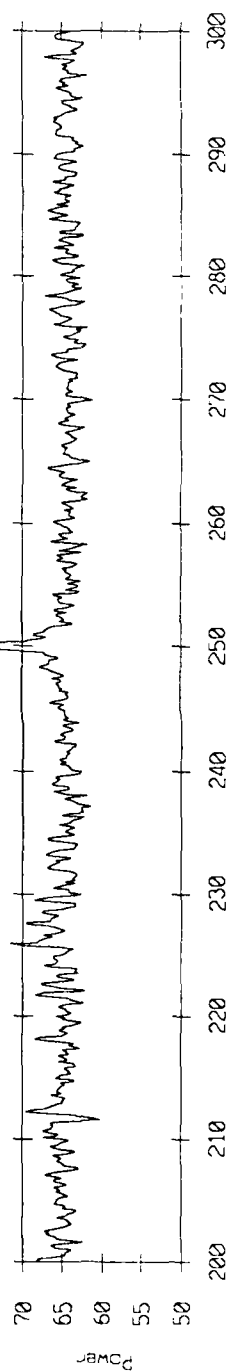


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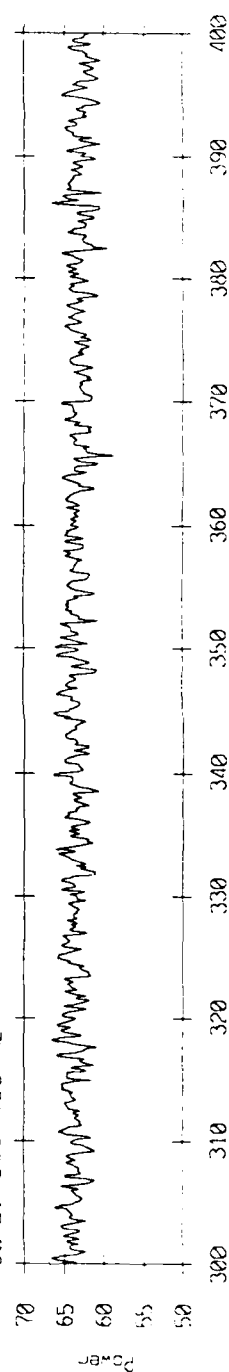
Frequency (Hz)

Band: 200-300 Hz



Frequency (Hz)

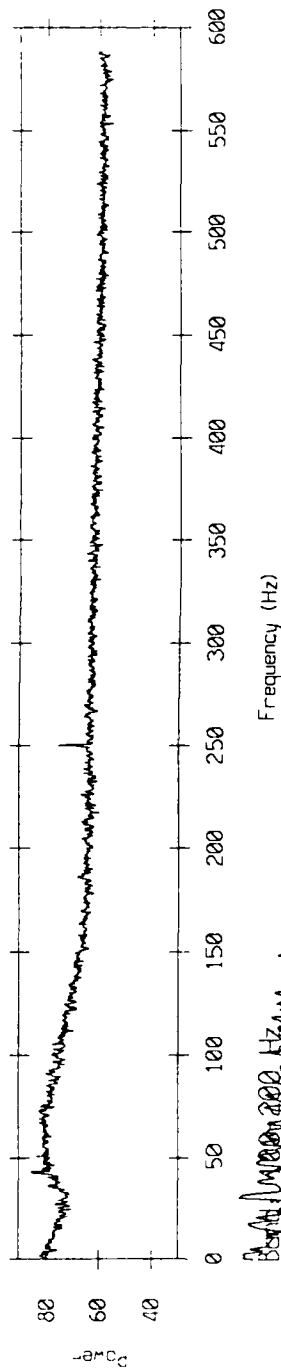
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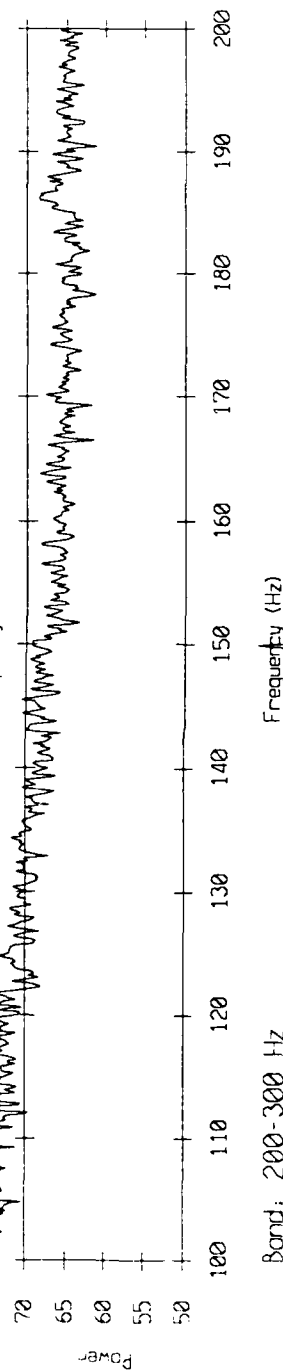
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Power Spectrum - 86247.1 Channel #20

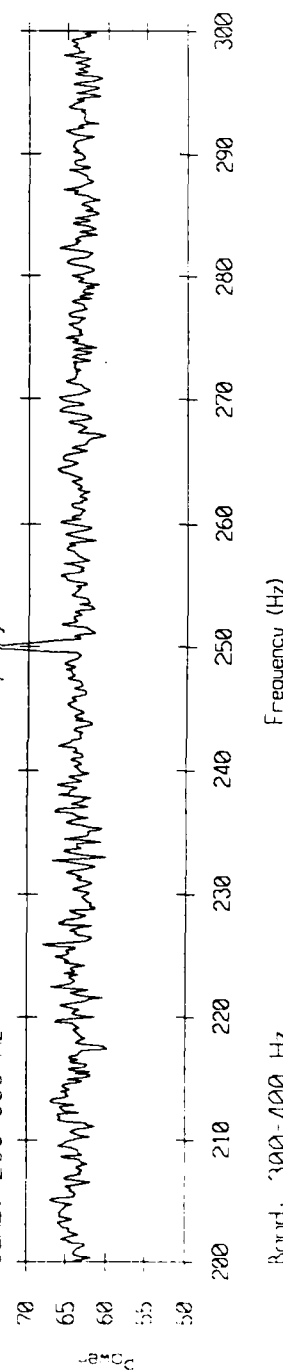
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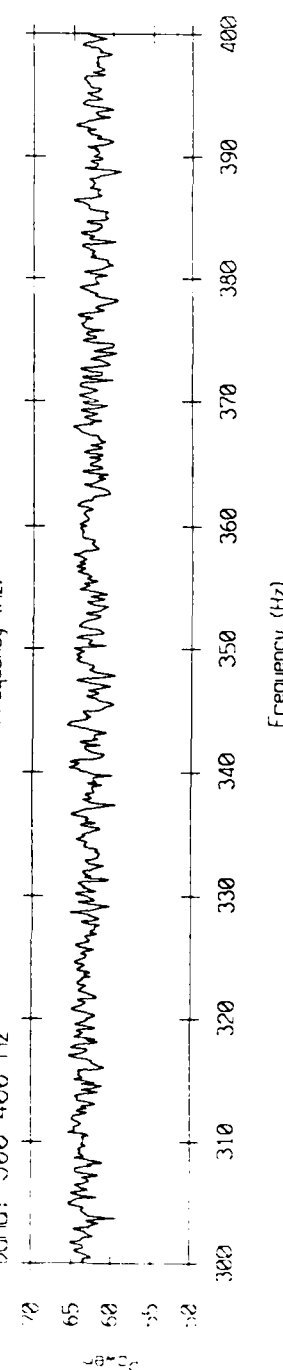
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Band: 300-400 Hz

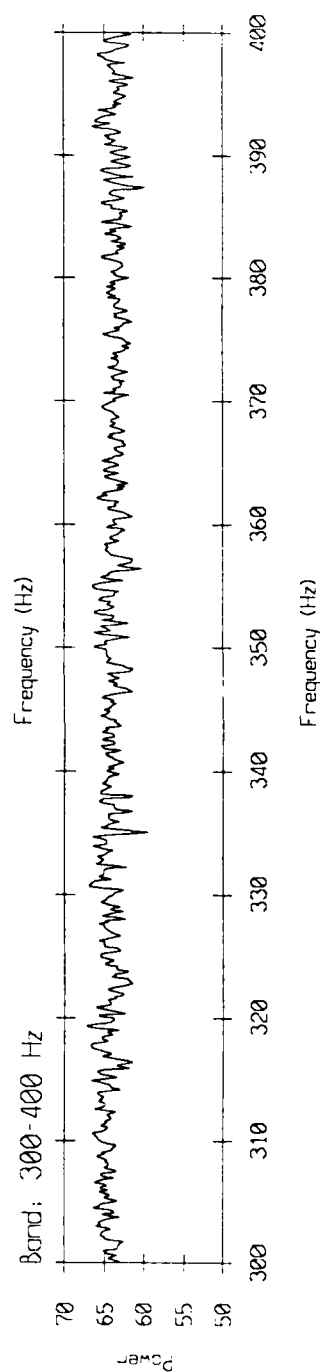
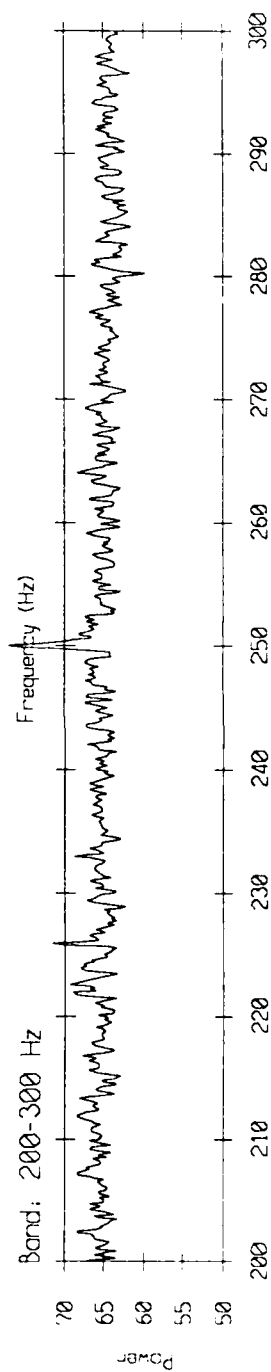
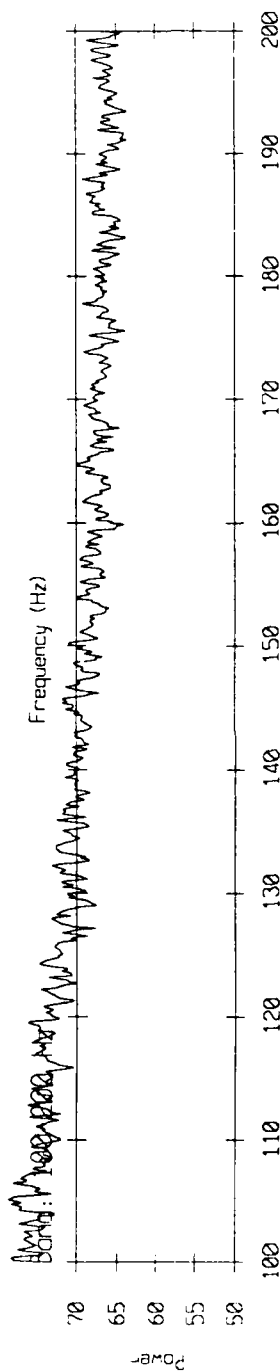
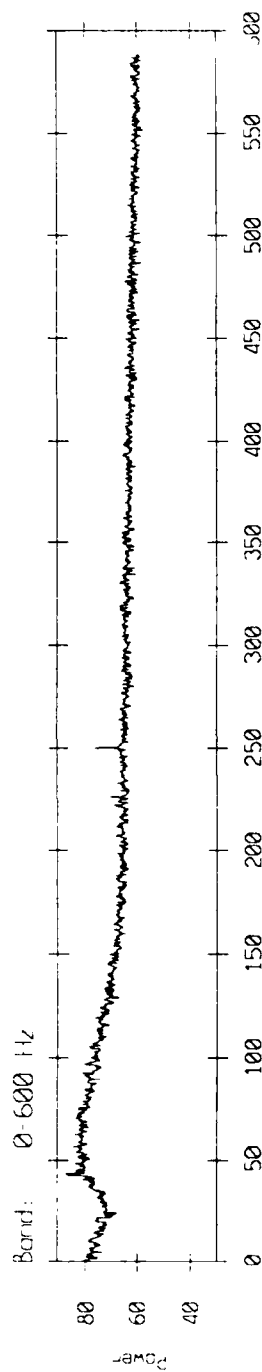


Band: 400-600 Hz





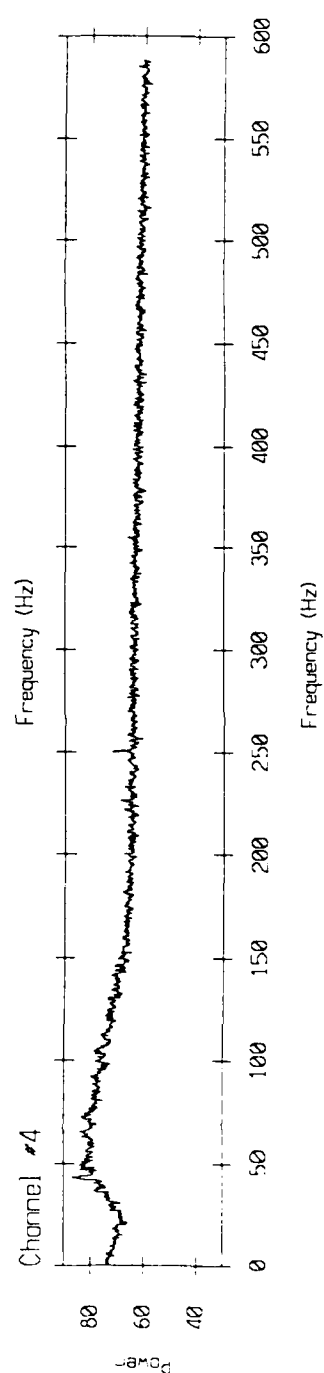
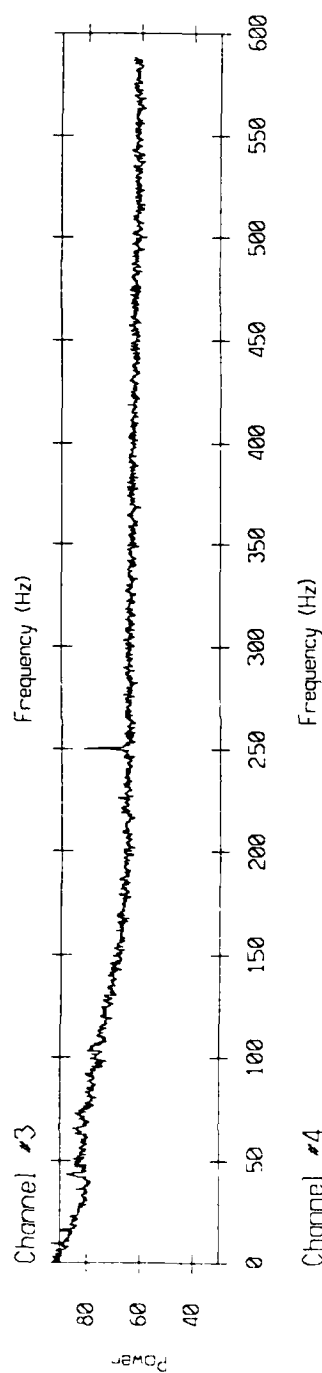
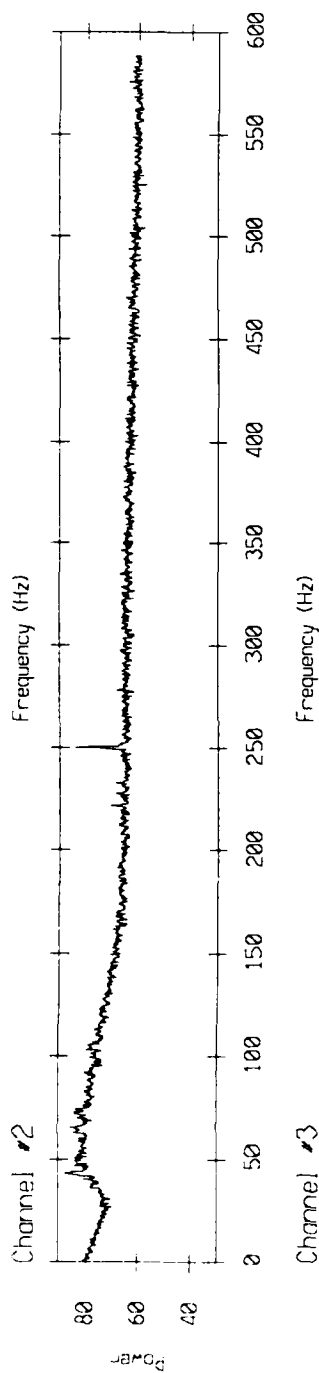
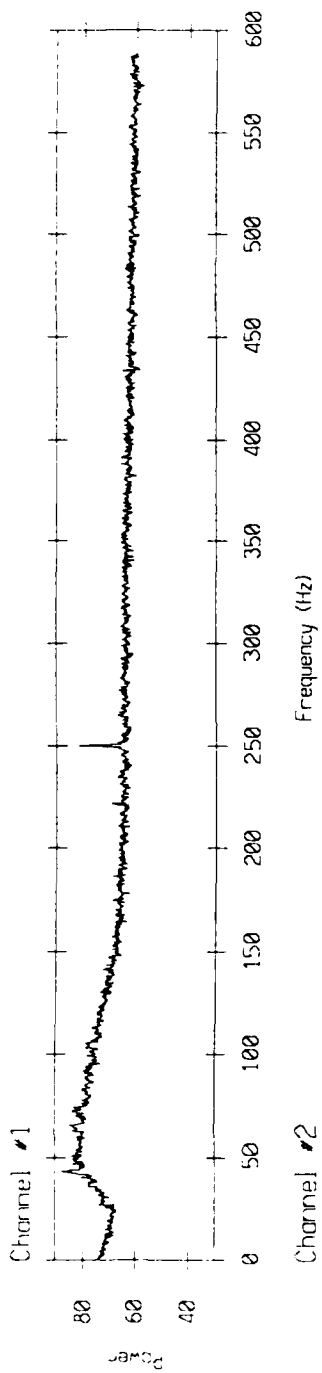
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### III. Power Spectra.

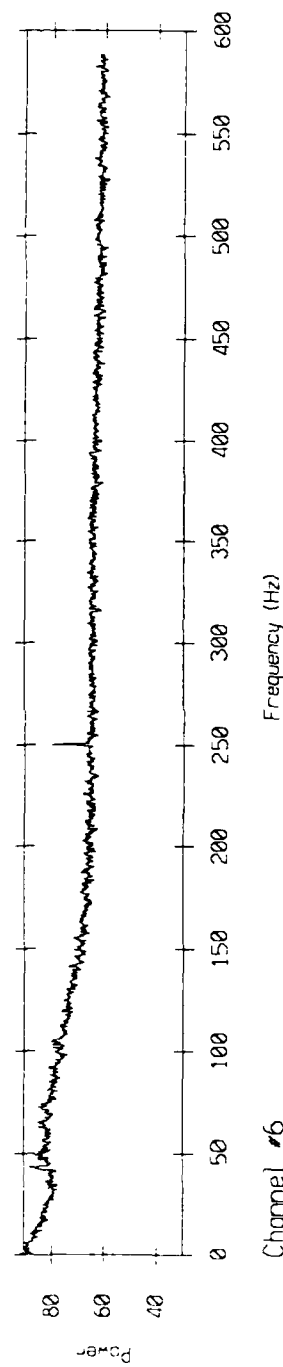
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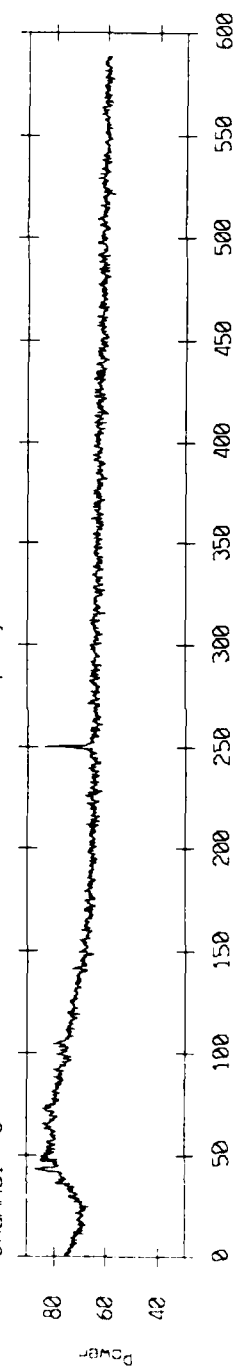


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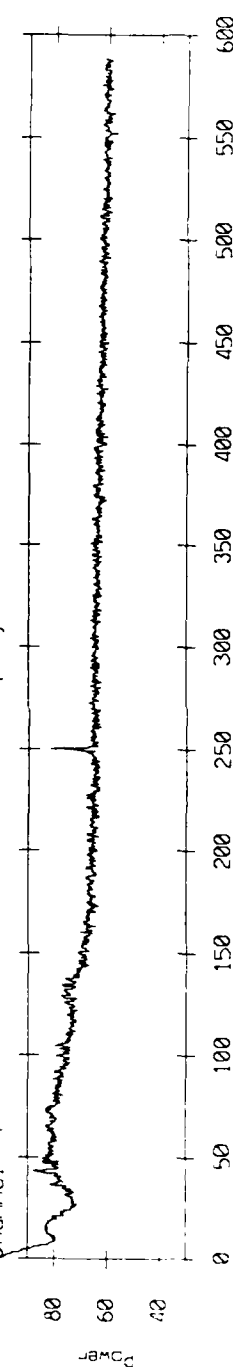
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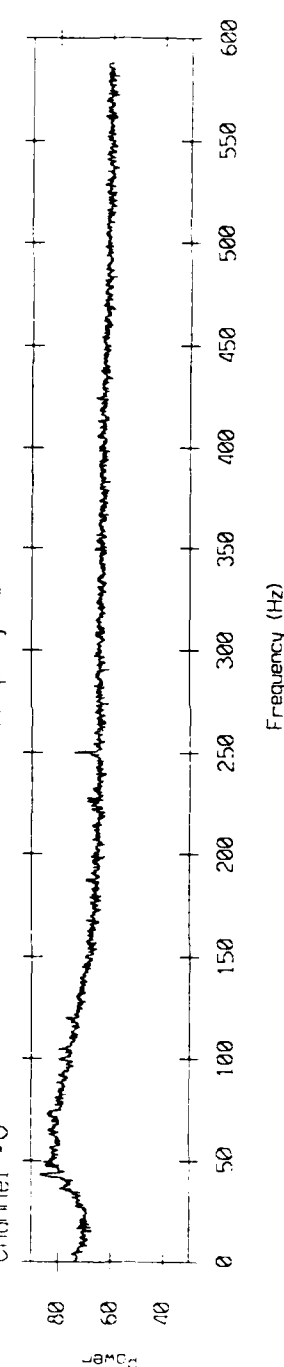
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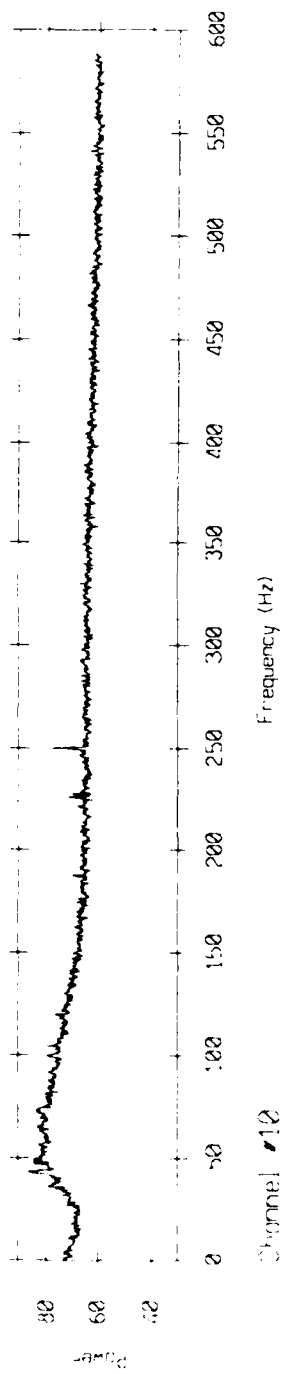


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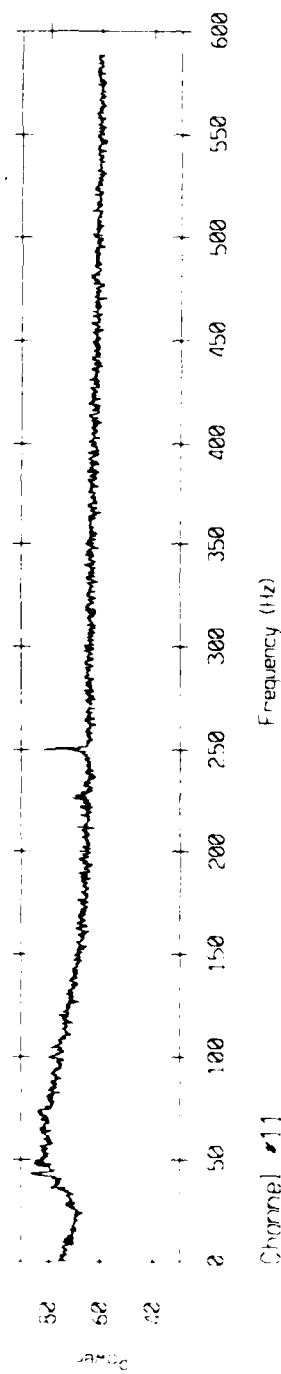


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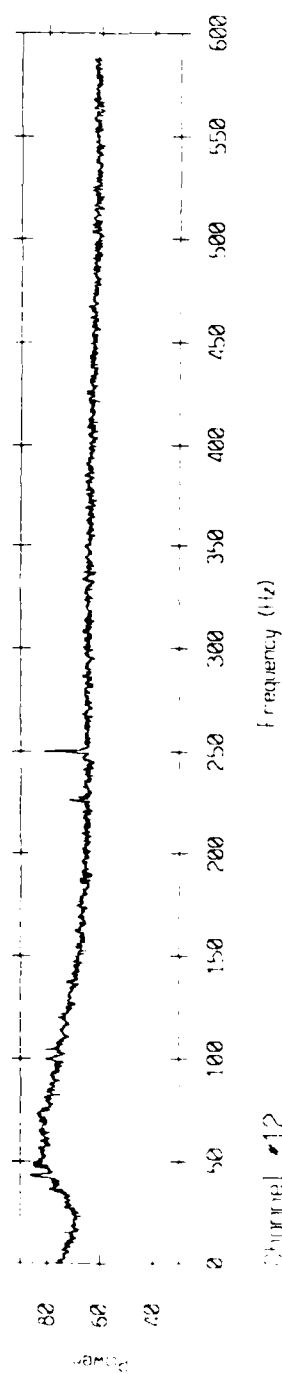
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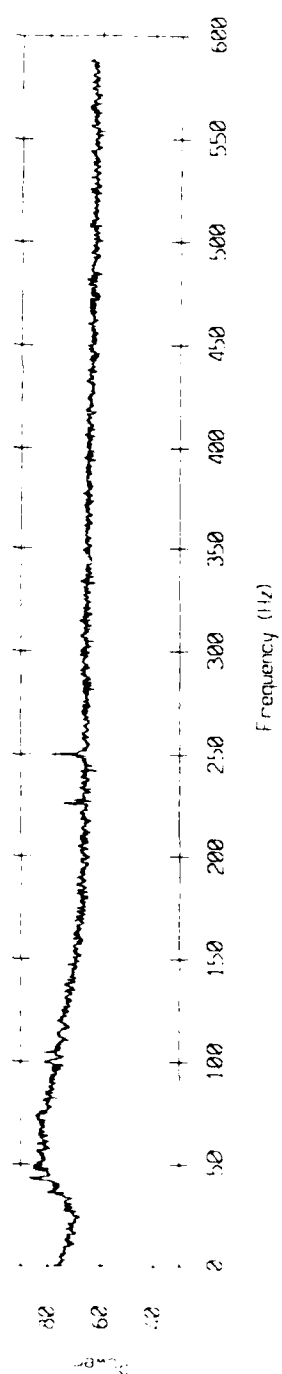
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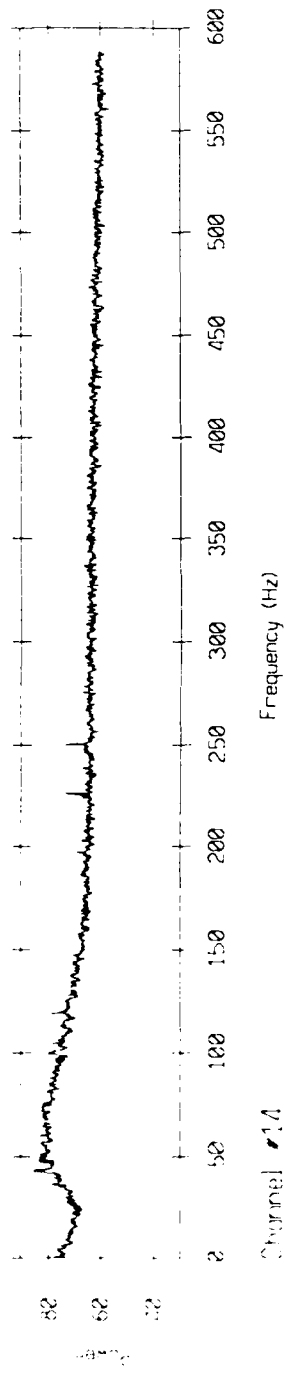


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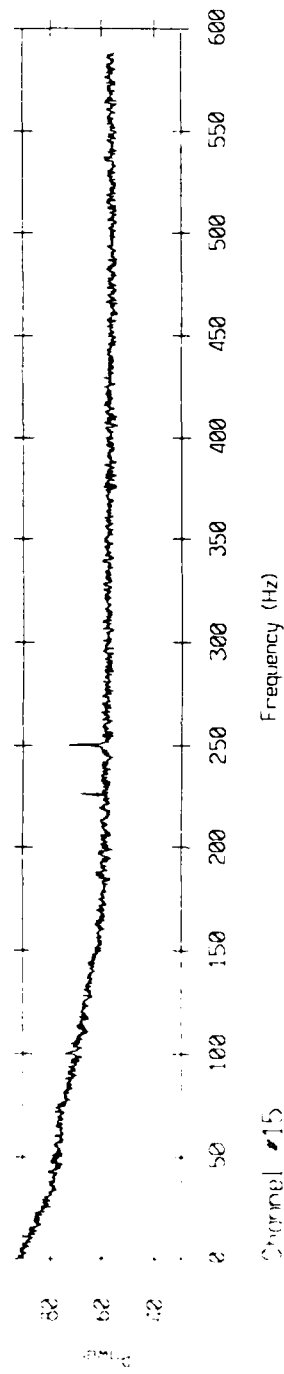


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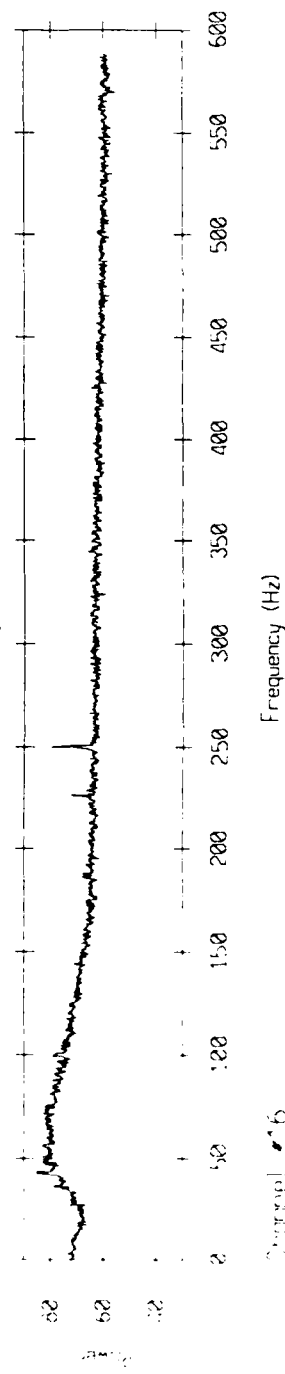
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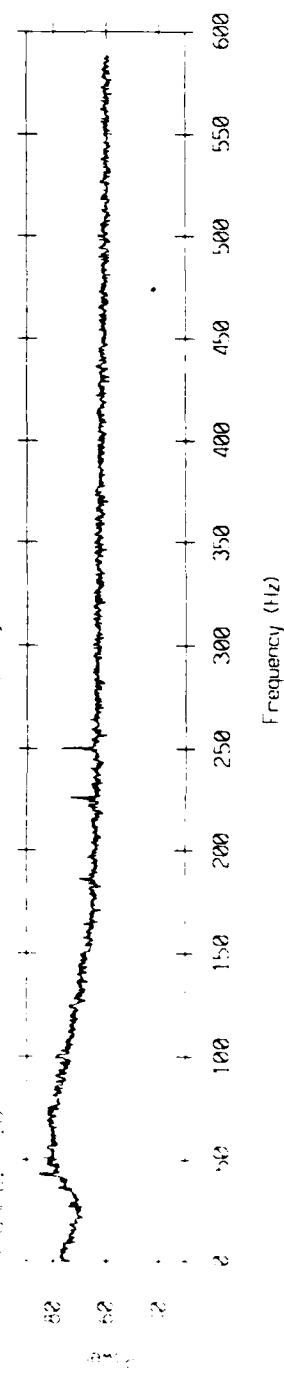
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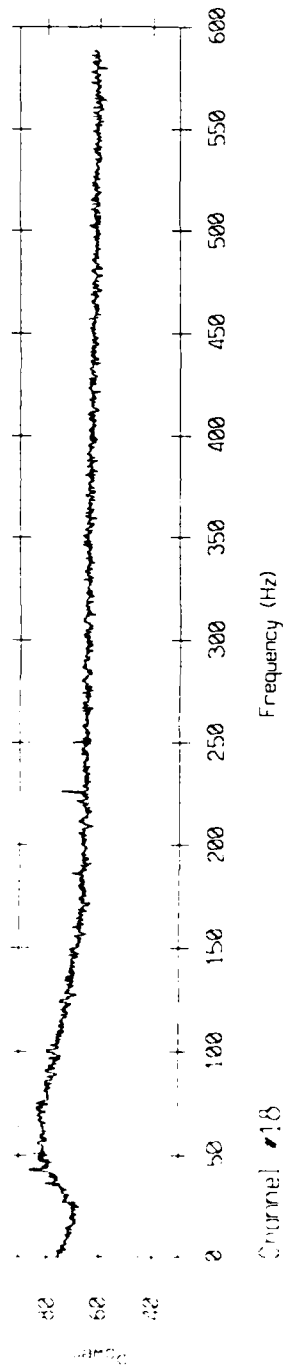


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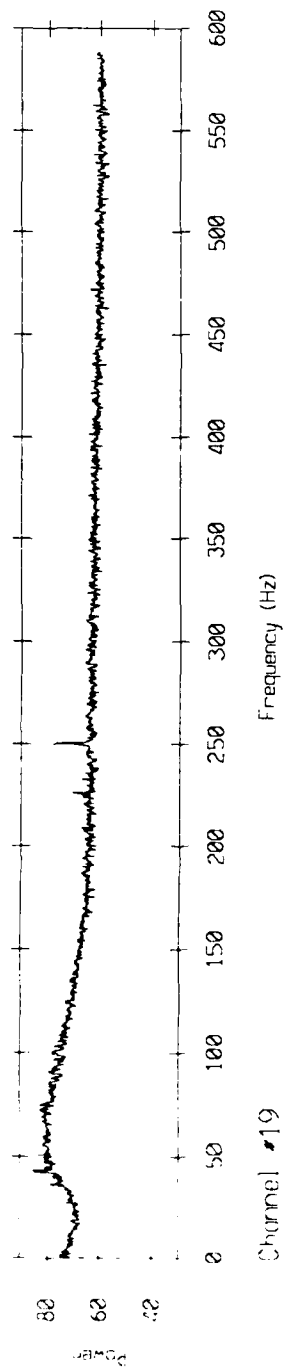


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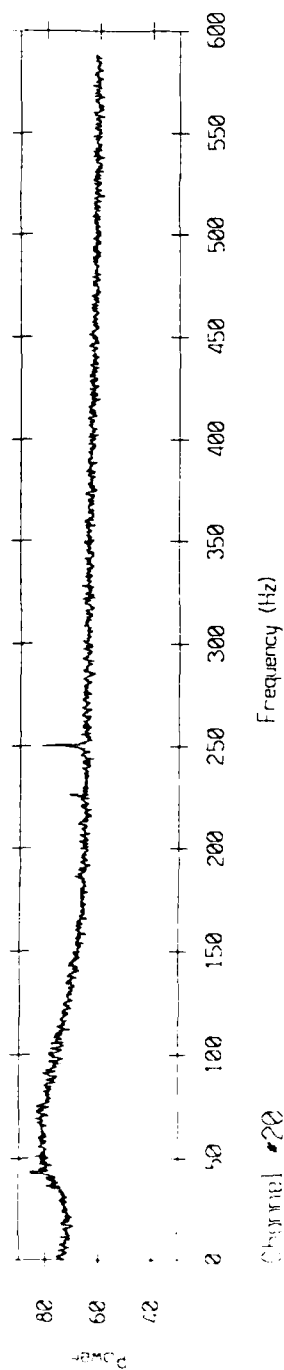
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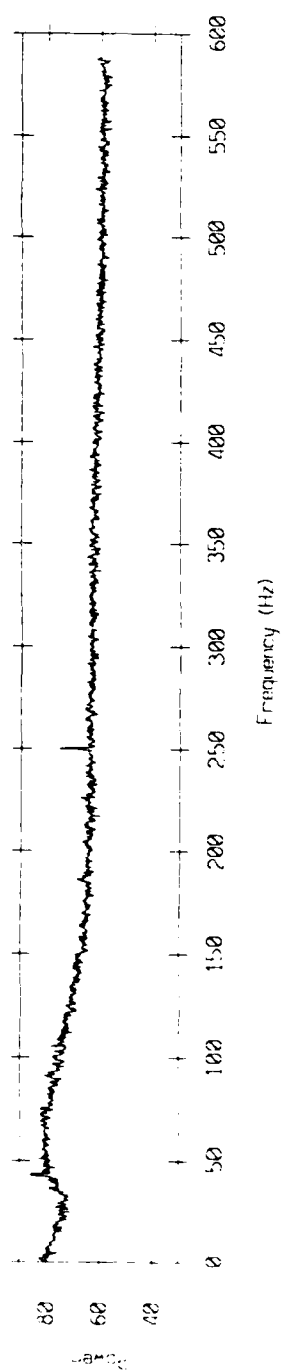
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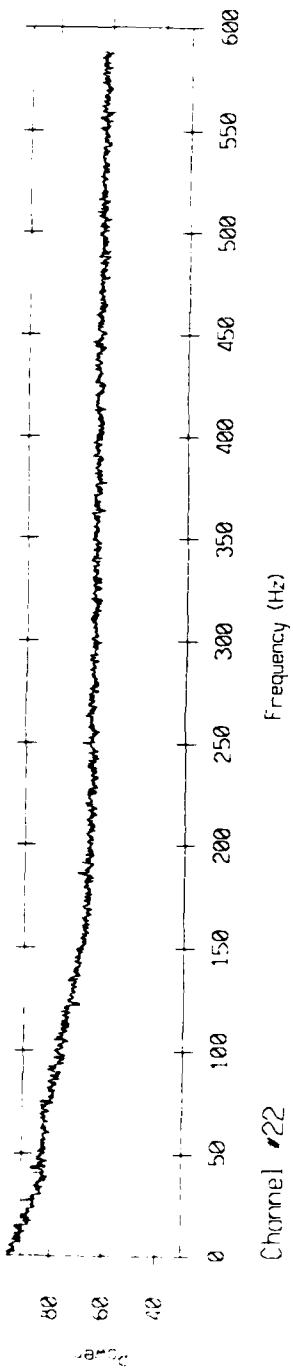
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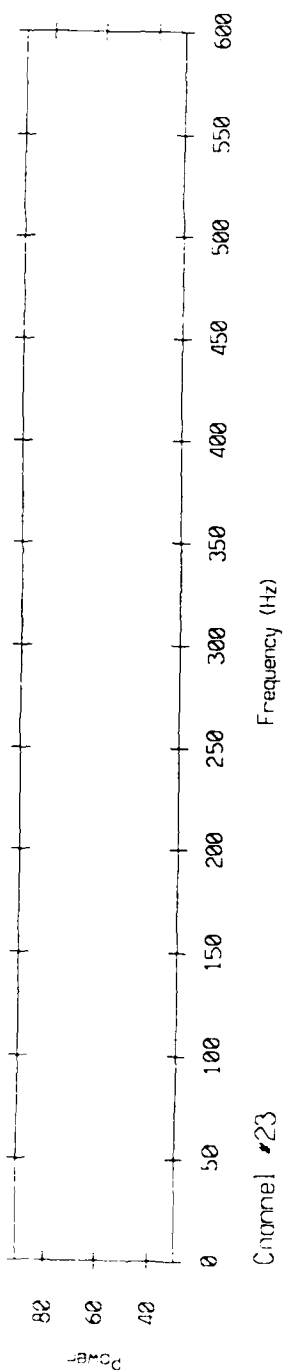


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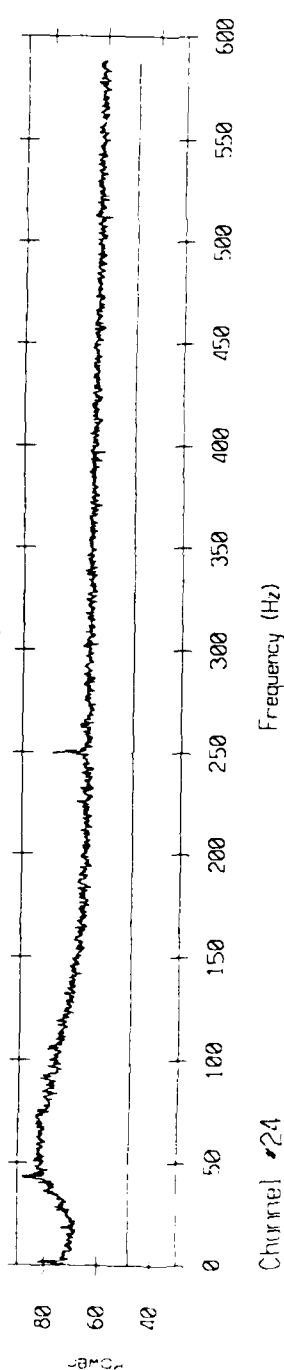
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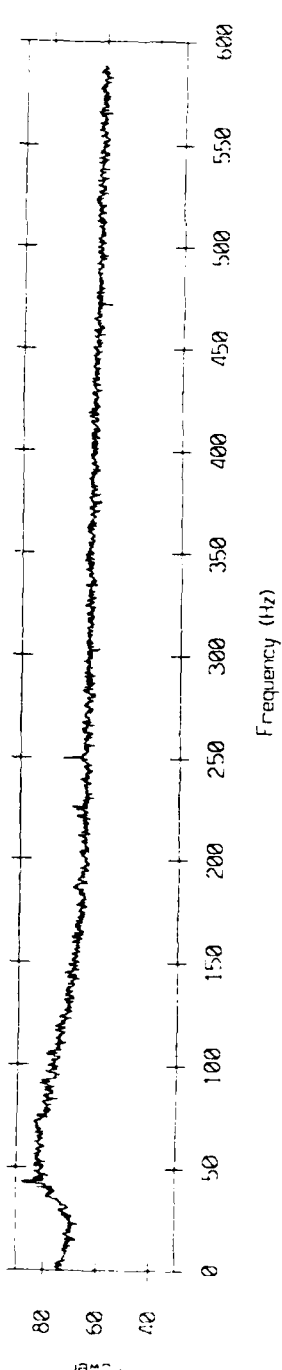
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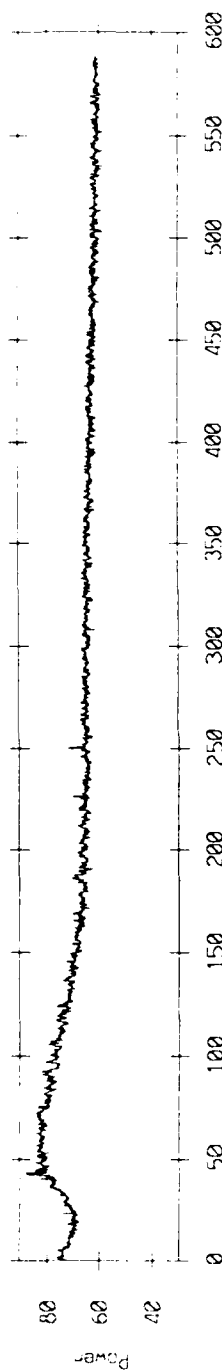


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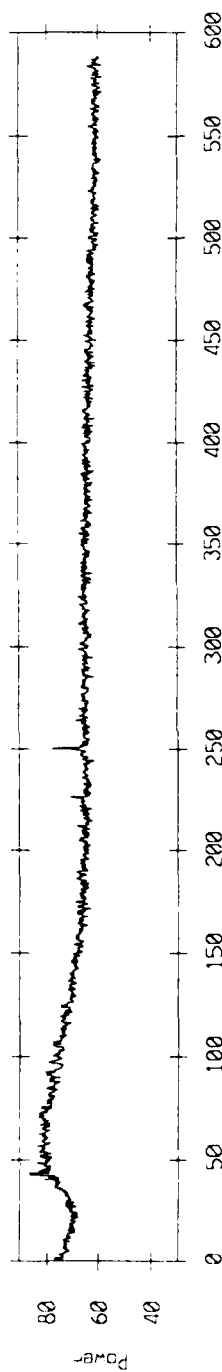


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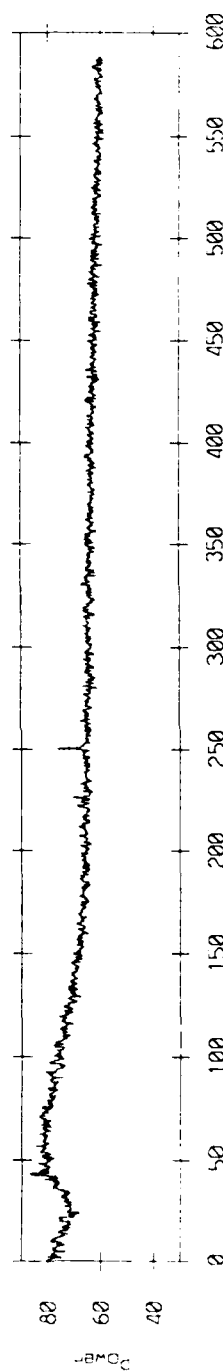
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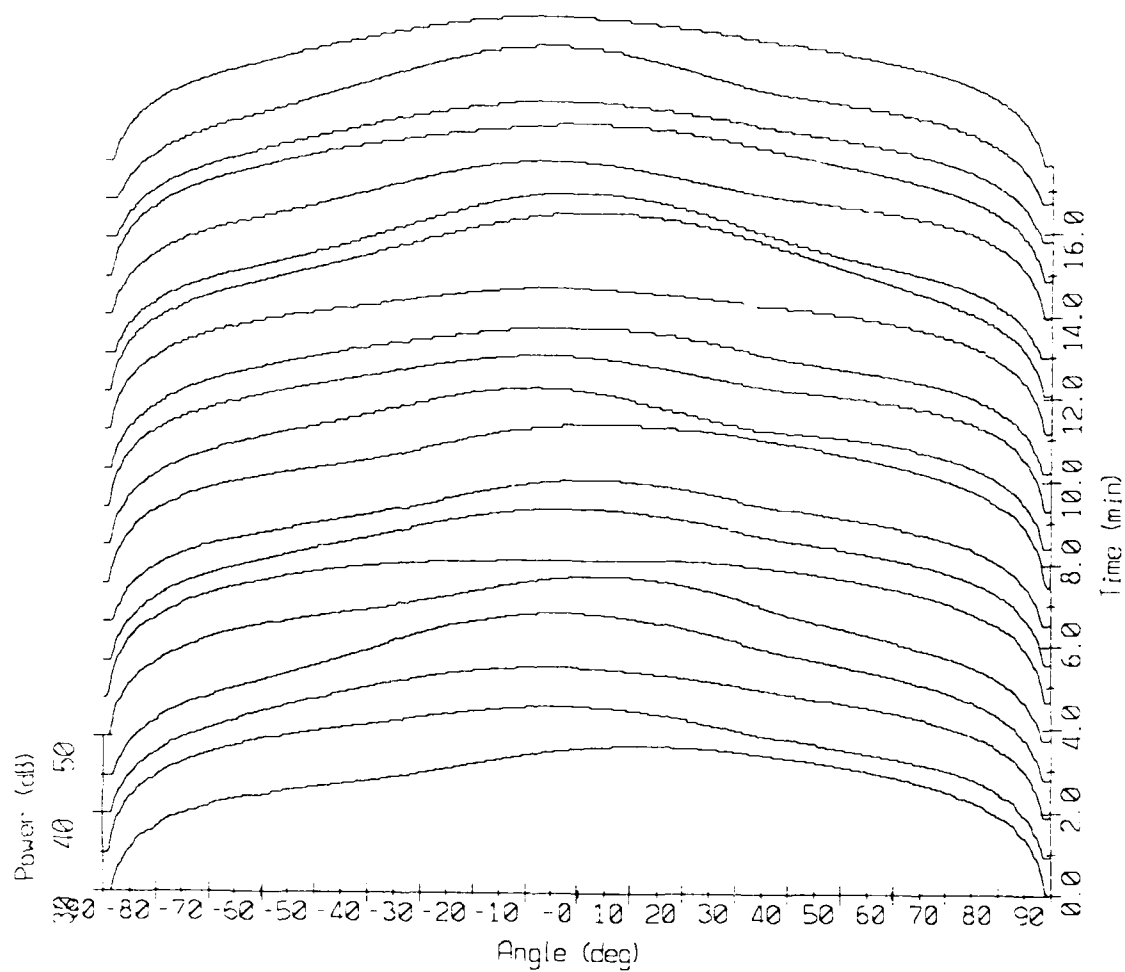


Channel #27

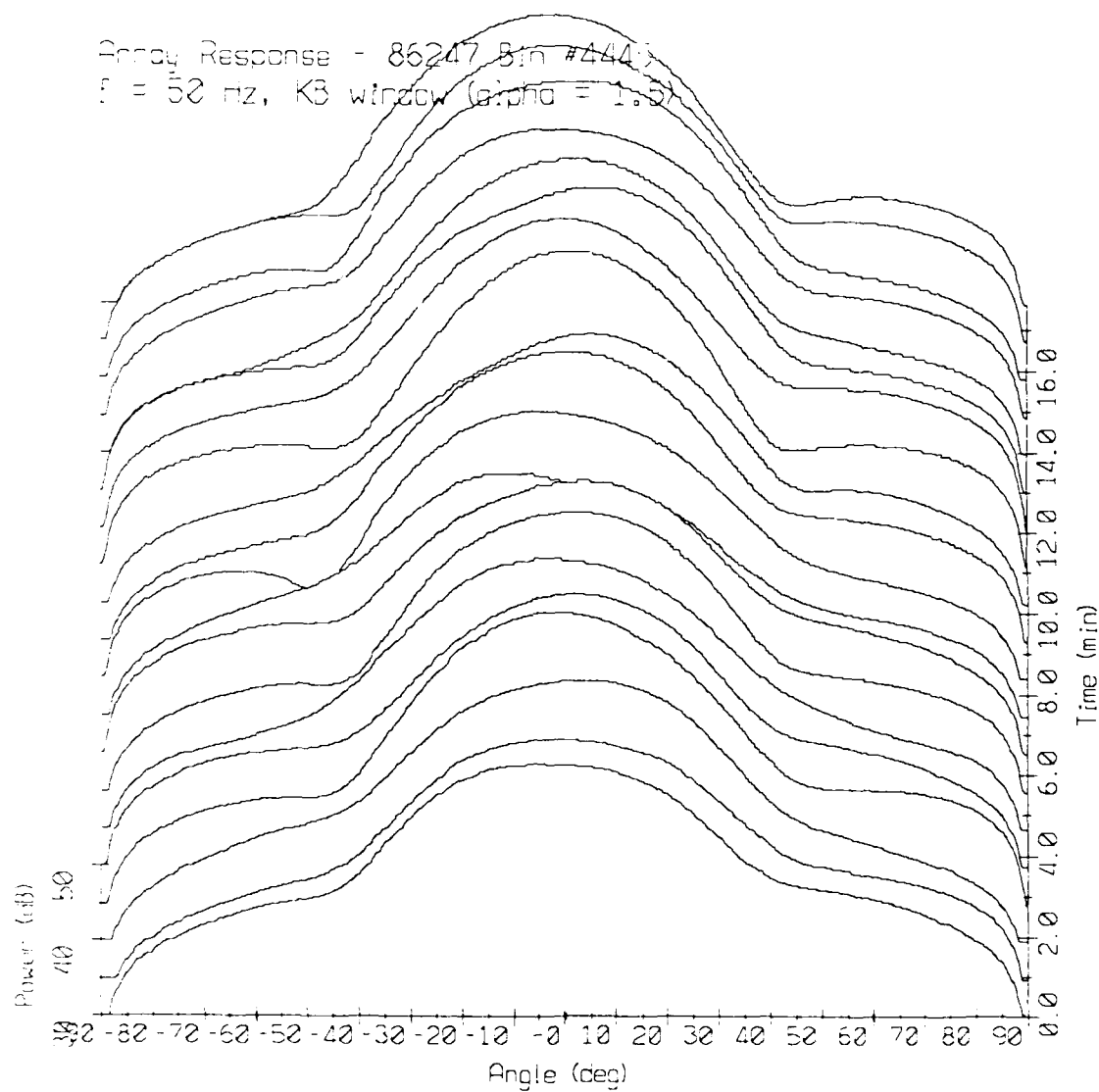


#### IV. Array Response: Waterfall, KB Window.

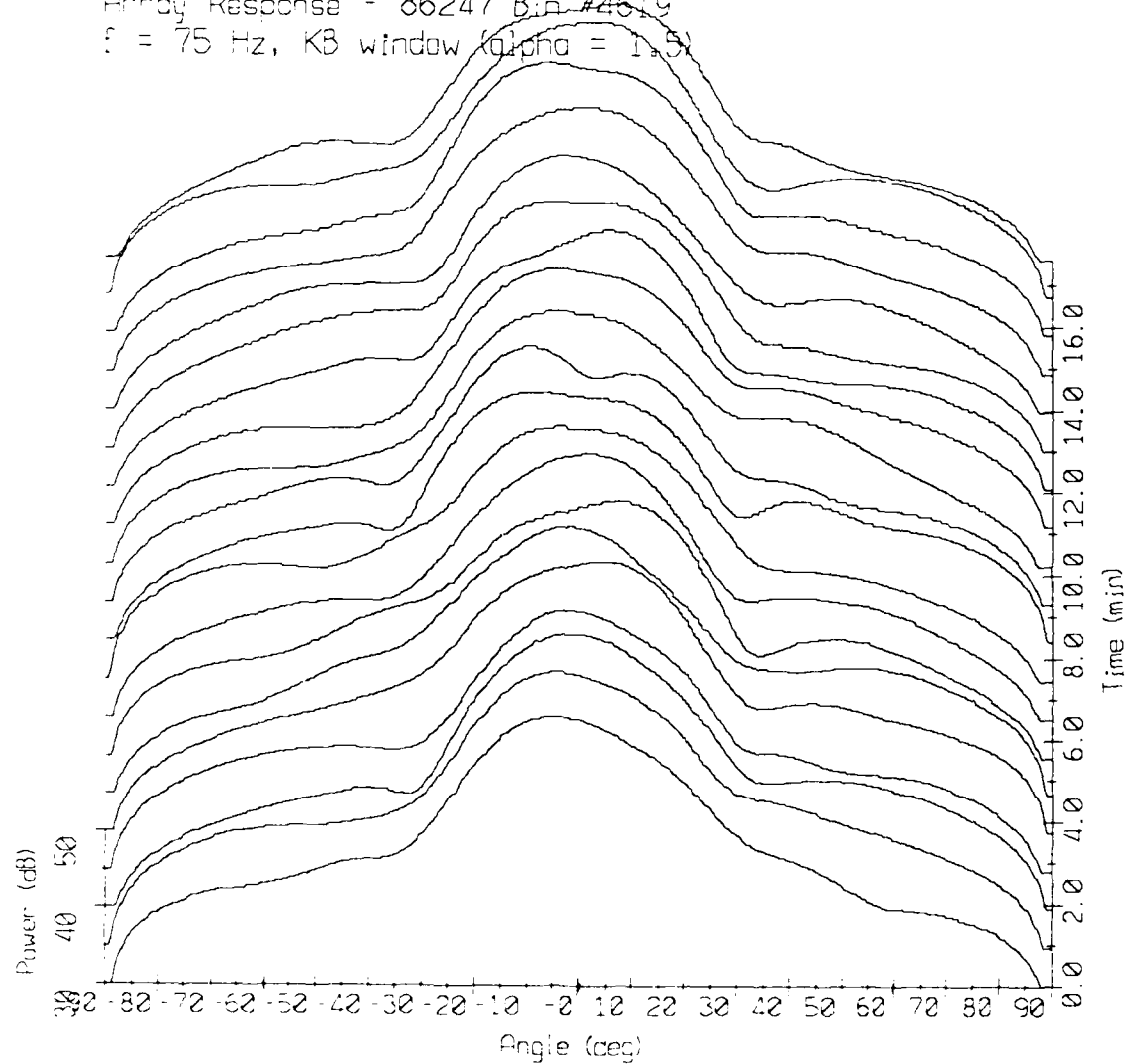
Array Response - 86247 Bin #4271  
 $f = 25$  Hz, KB window ( $\alpha = 1.5$ )



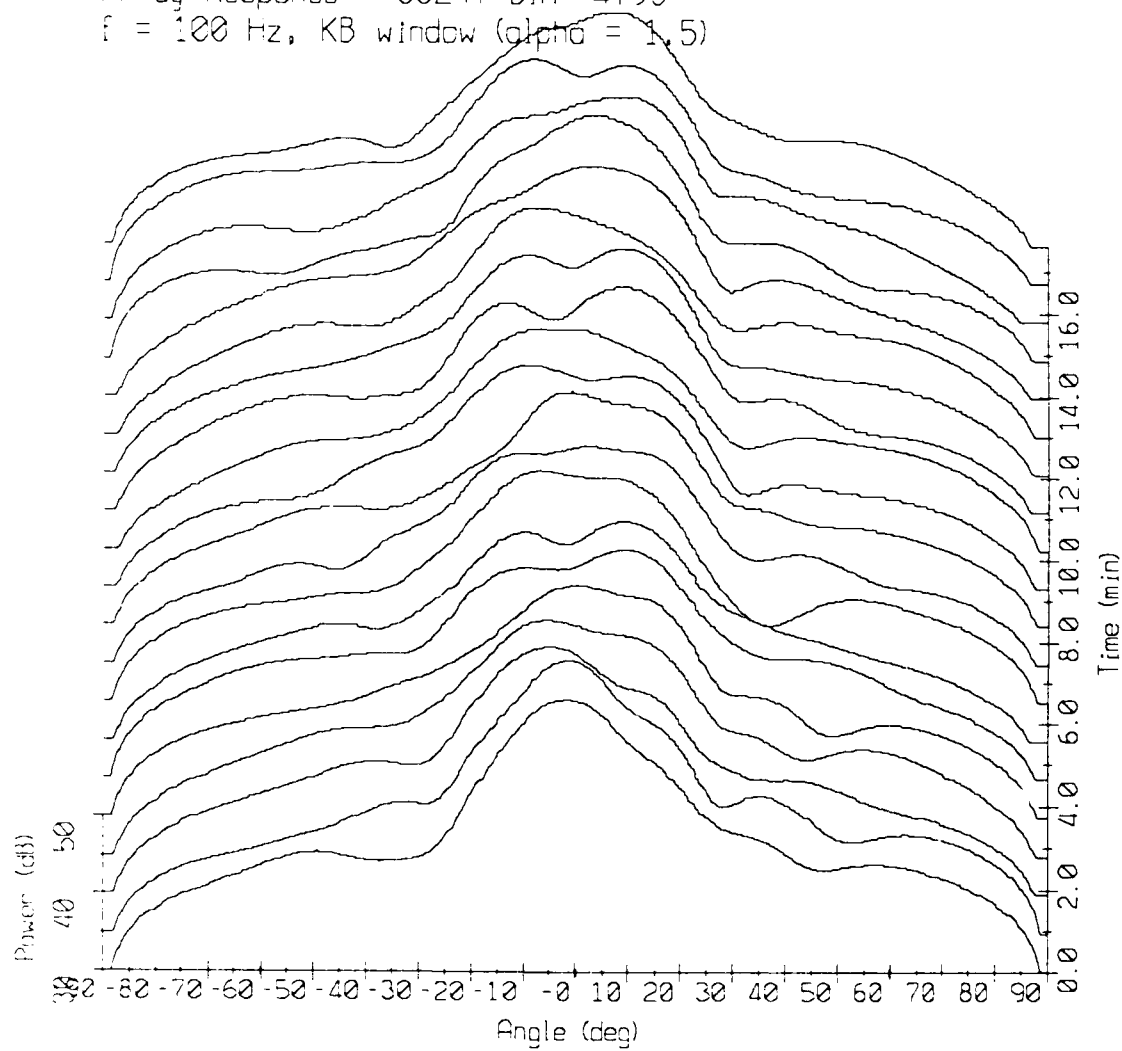
Array Response - 86247 Bin #444  
 $f = 50$  Hz, KB window ( $\alpha = 1.5$ )



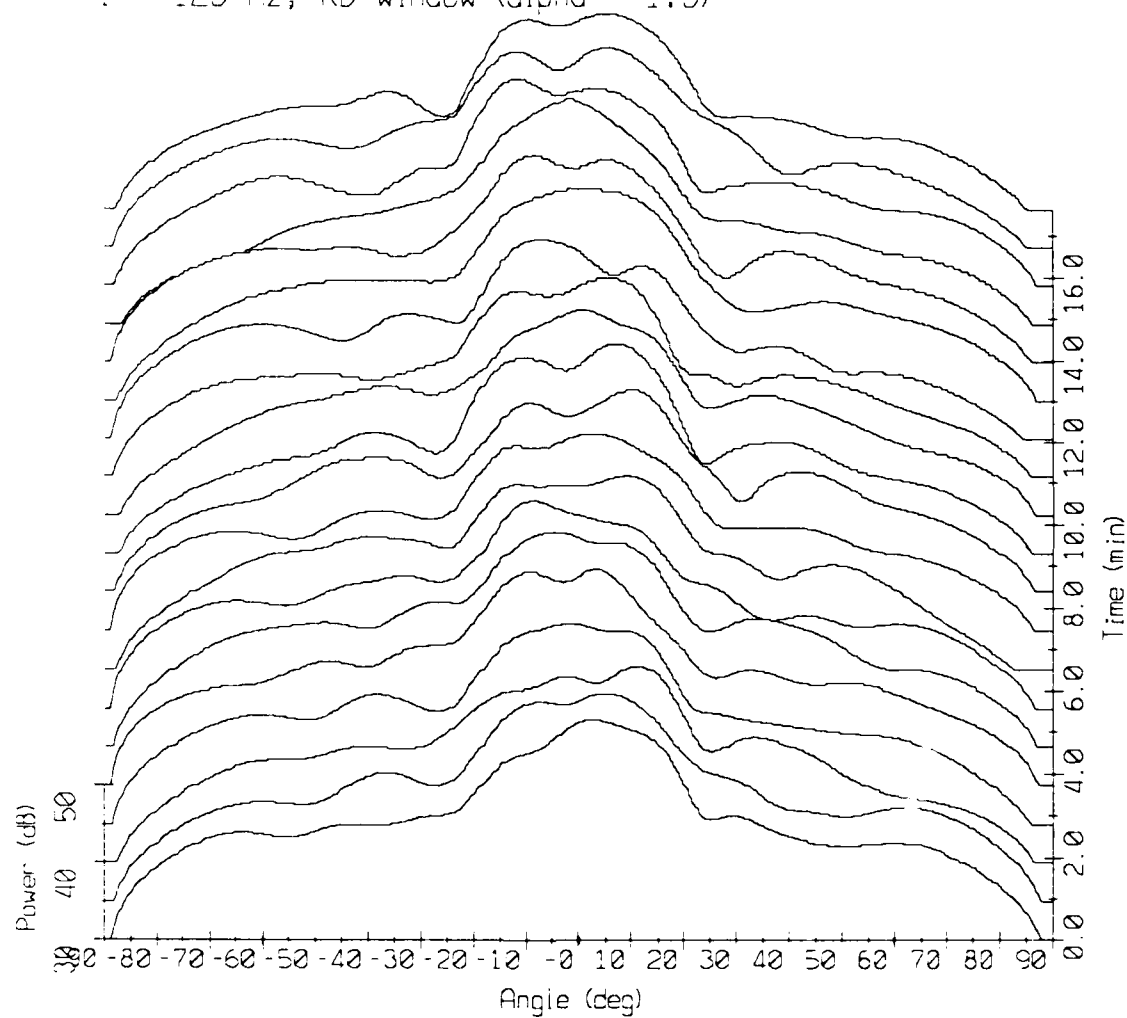
Array Response - 86247 Bin #4519  
 $f = 75$  Hz, KB window ( $\alpha = 1.5$ )



Array Response - 86247 Bin #4793  
 $f = 100$  Hz, KB window ( $\alpha = 1.5$ )

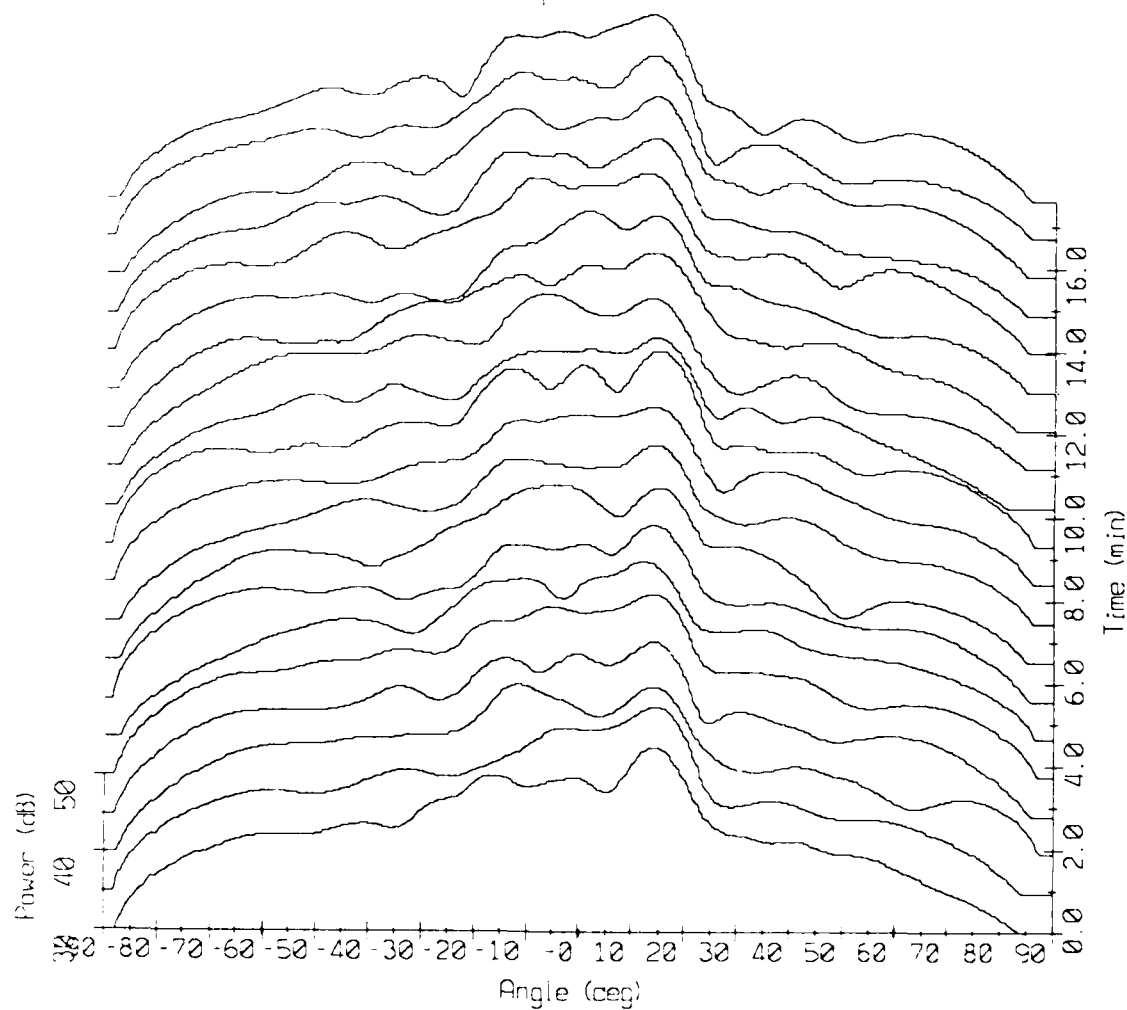


Array Response - 86247 Bin #4967  
 $f = 125$  Hz, KB window ( $\alpha = 1.5$ )

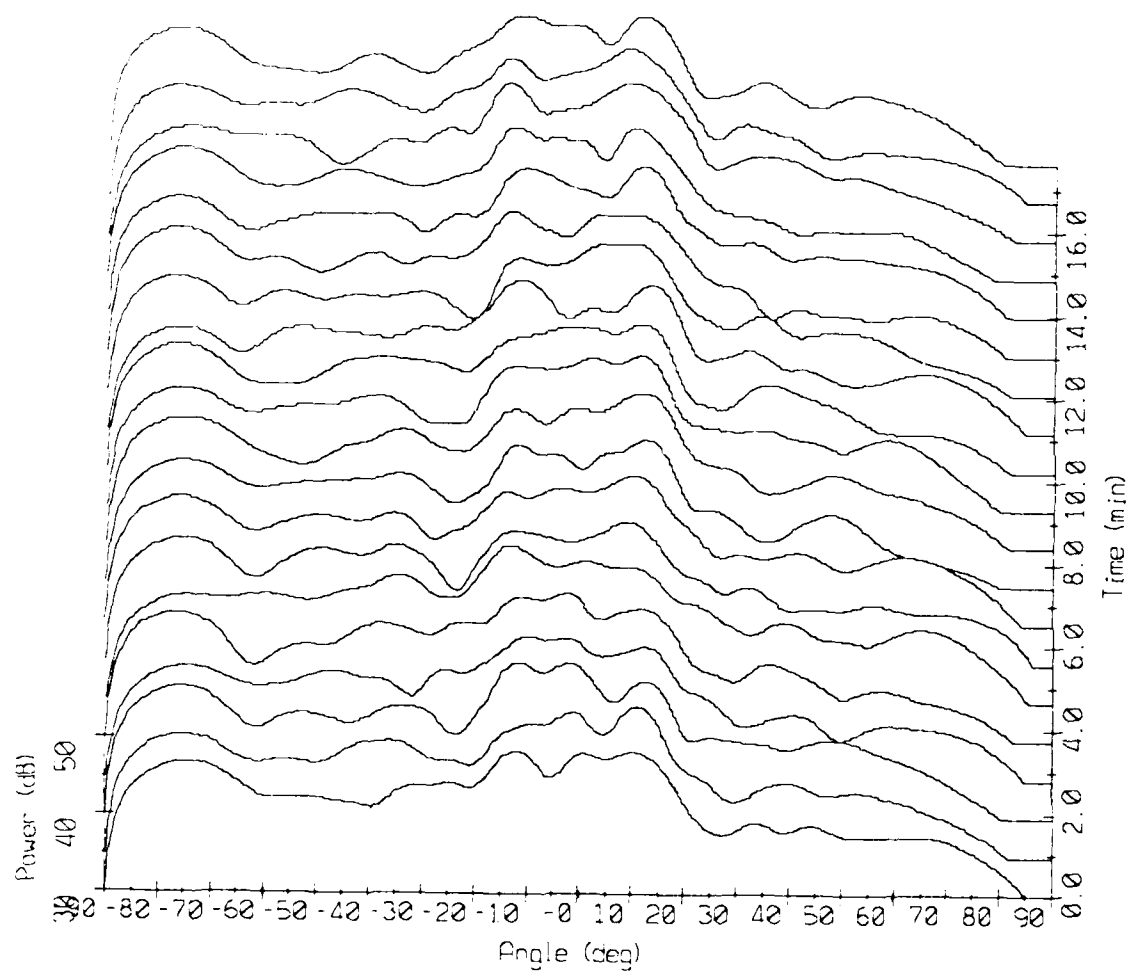




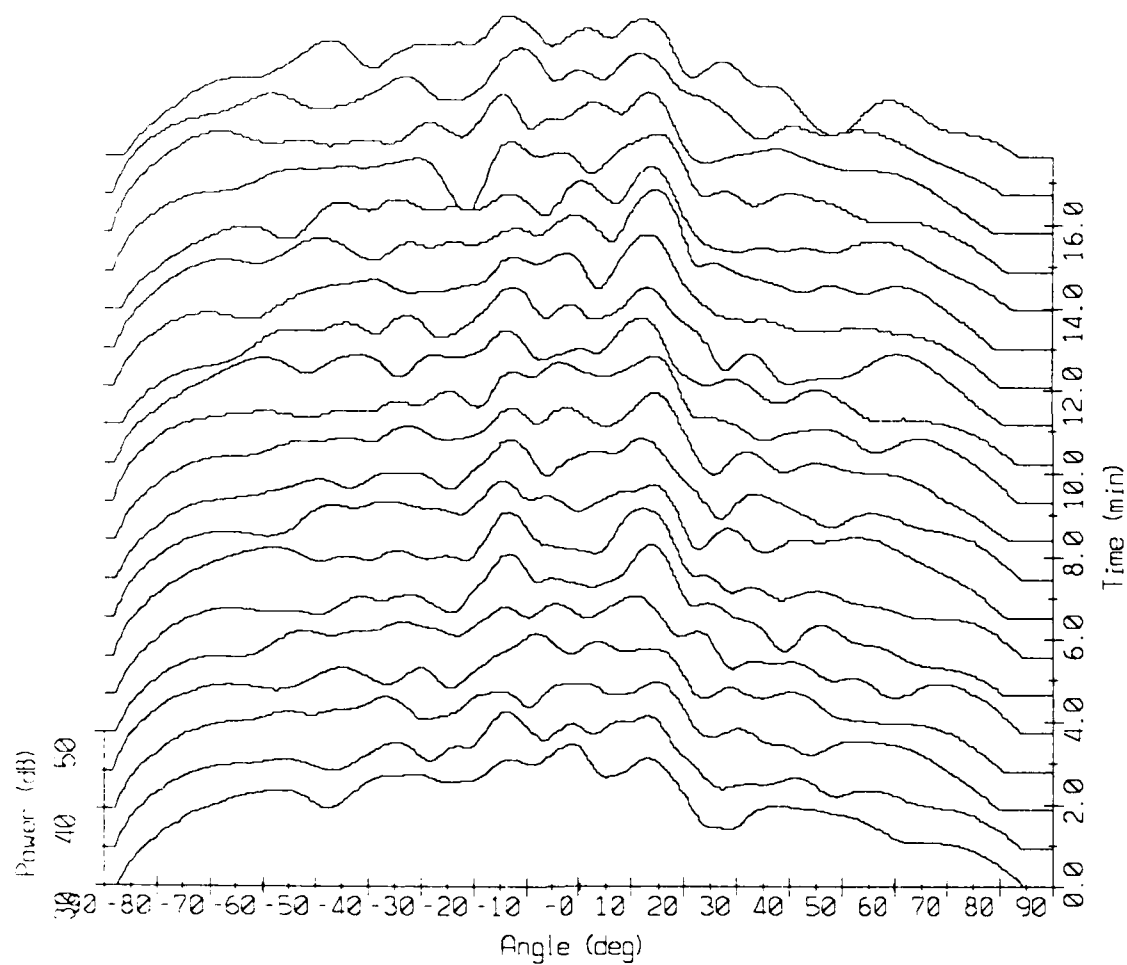
Range Response - 86247 Bin #5141  
 $f = 150$  Hz, KB window ( $\alpha = 1.5$ )



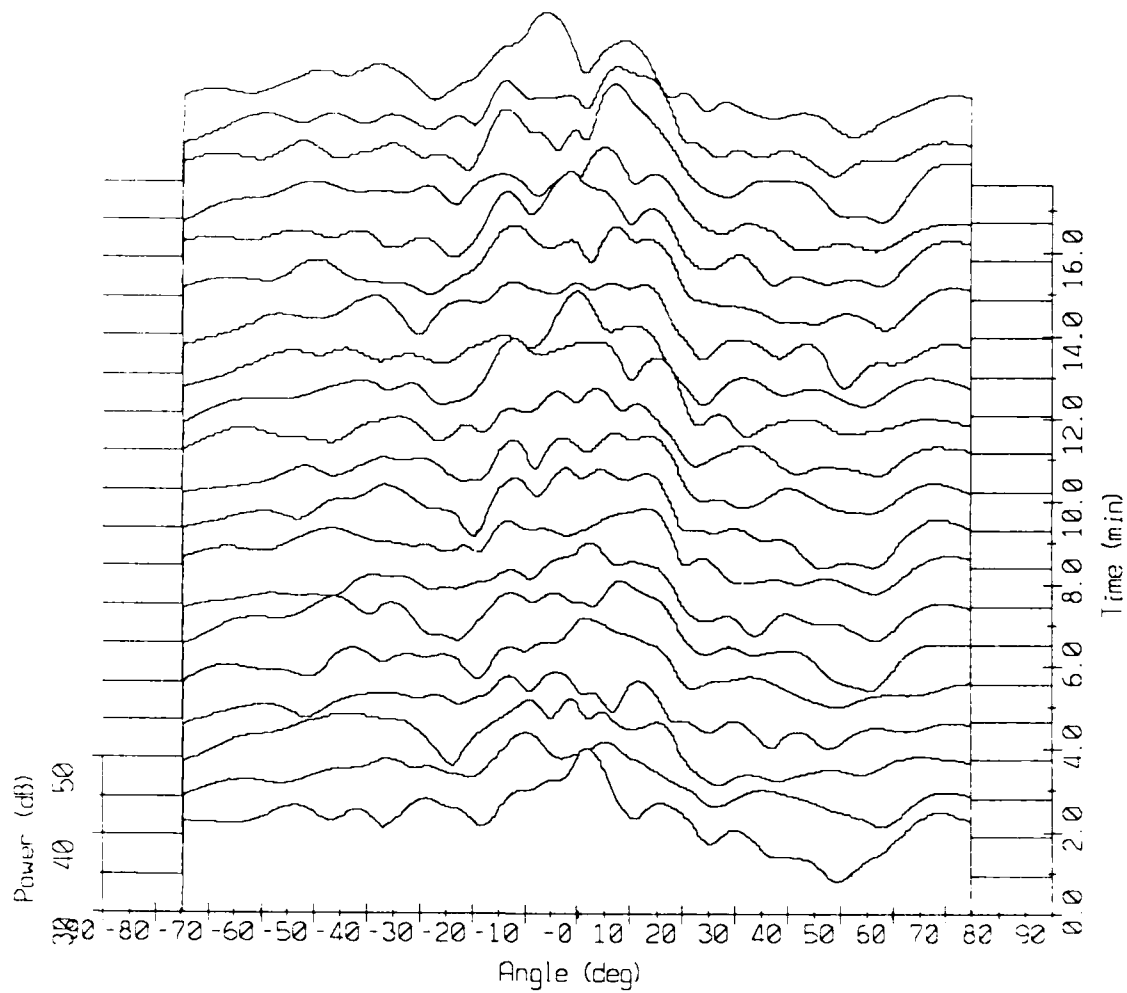
Array Response - 86247 Bin #5316  
 $f = 175$  Hz,  $\Delta B$  window (alpha = 1.5)



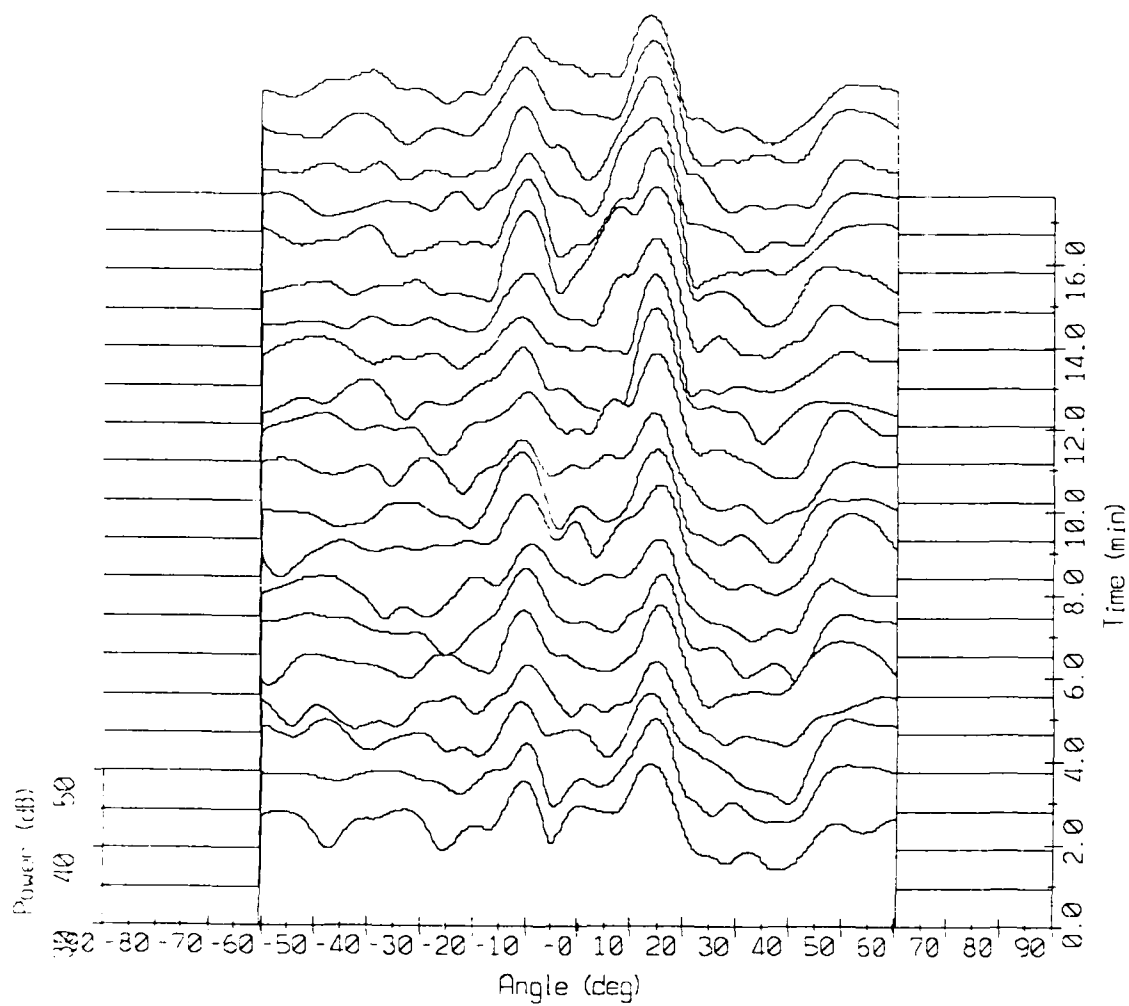
Array Response - 86247 Bin #5490  
 $f = 220$  Hz, KB window ( $\alpha = 1.5$ )



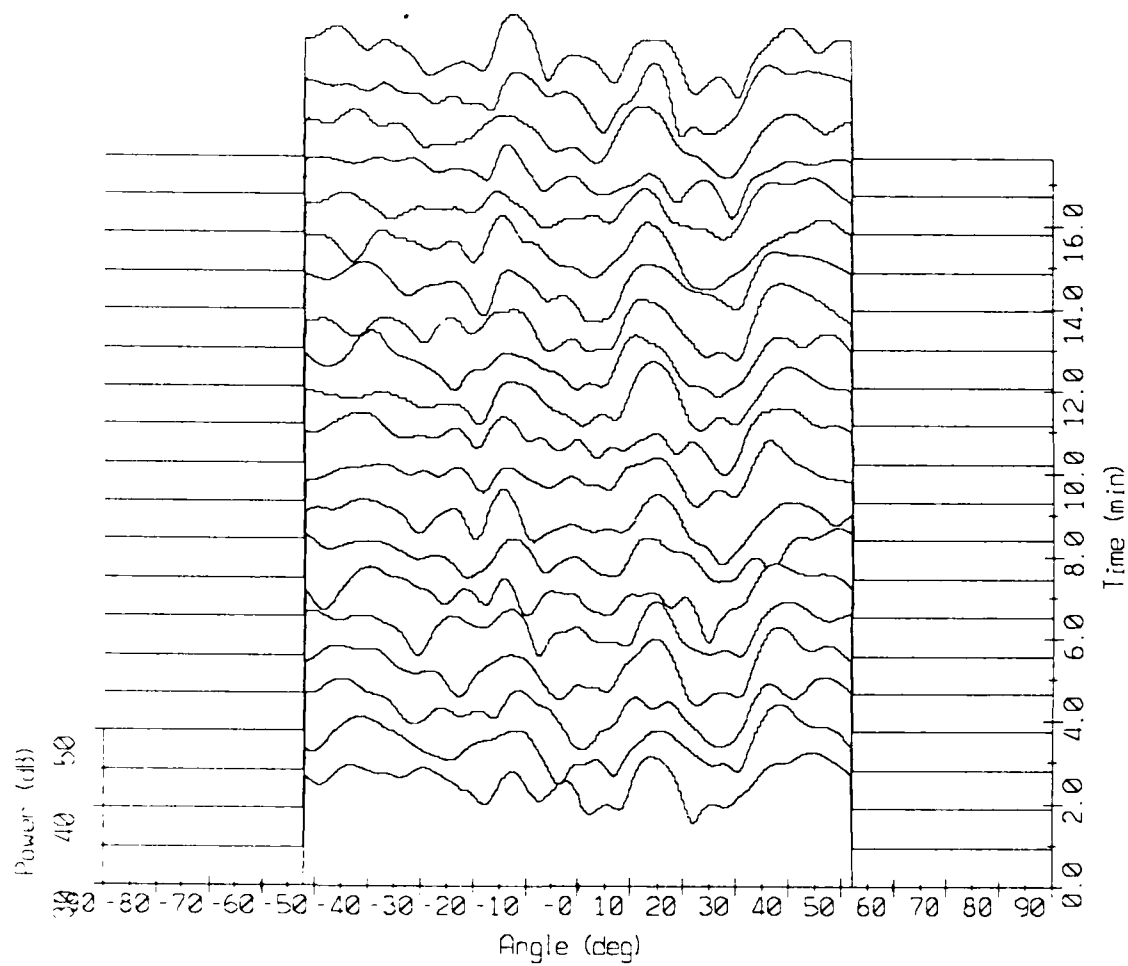
Acoustic Response - 86247 Bin #5664  
 $f = 225$  Hz, K8 window ( $\alpha = 1.5$ )



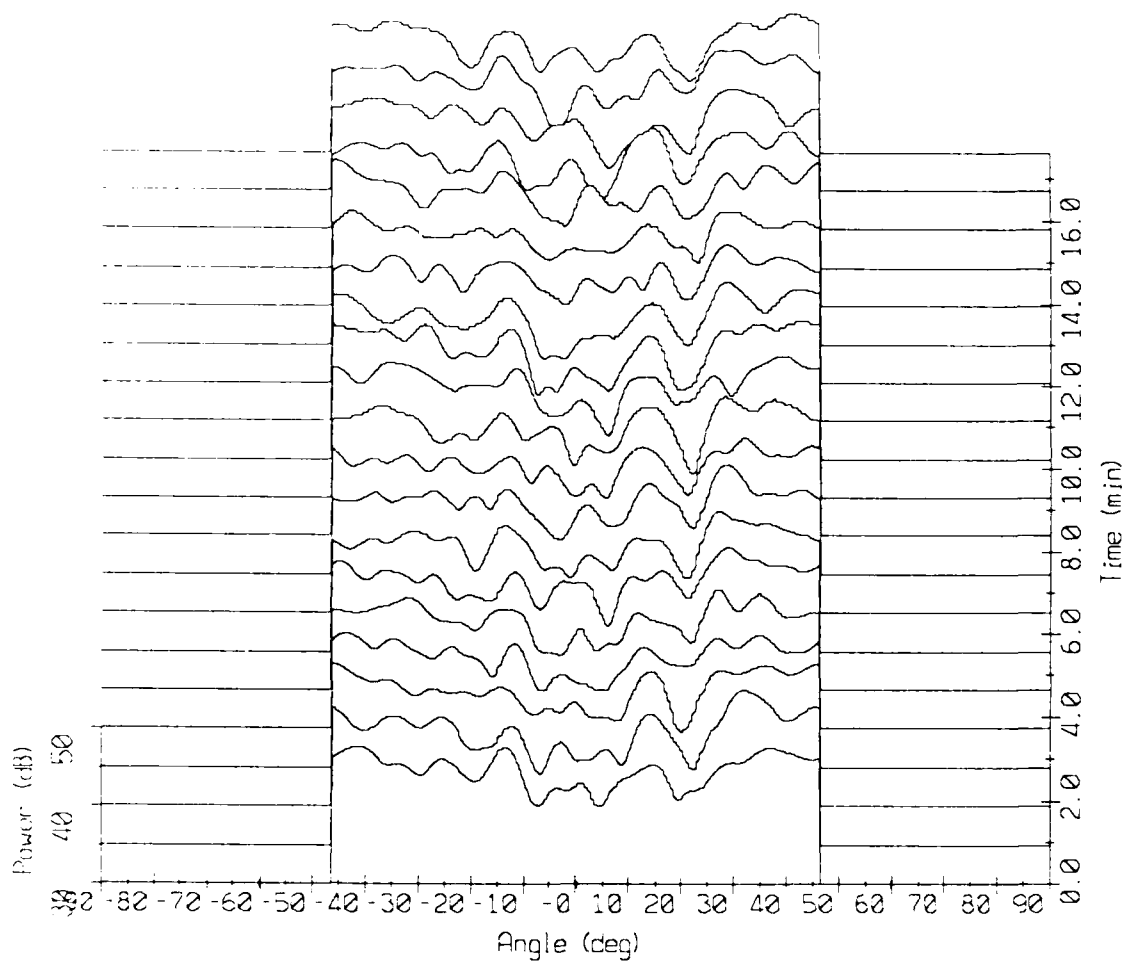
Array Response - 86247 B: #5832  
 $f = 250$  Hz, KB window ( $\alpha = 1.5$ )



Array Response - 86247 Bin #6012  
 $f = 275$  Hz,  $\Delta B$  window ( $\alpha = 1.5$ )



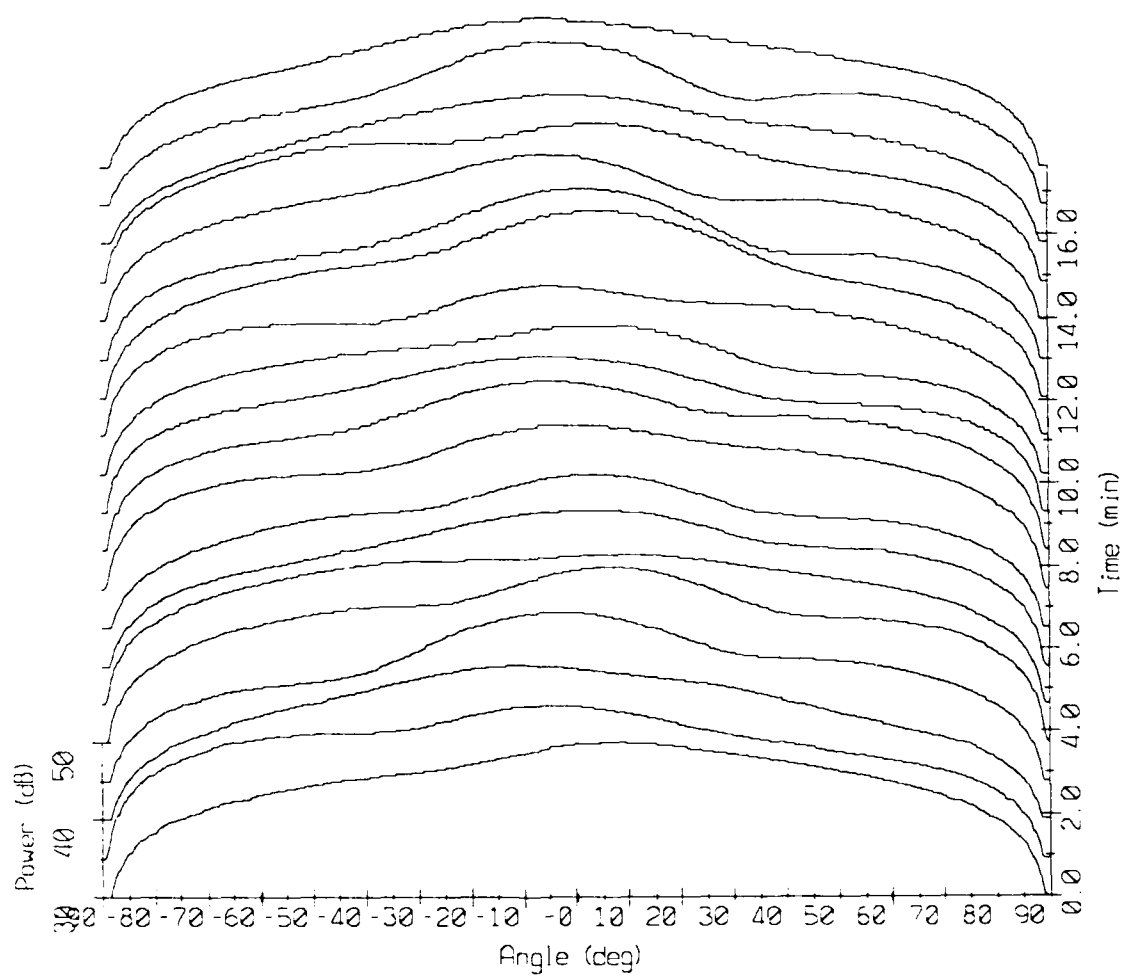
Acad. Response - 86247 Bin #6186  
 $f = 320 \text{ Hz}$ ,  $\Delta B$  window ( $\alpha = 1.5$ )

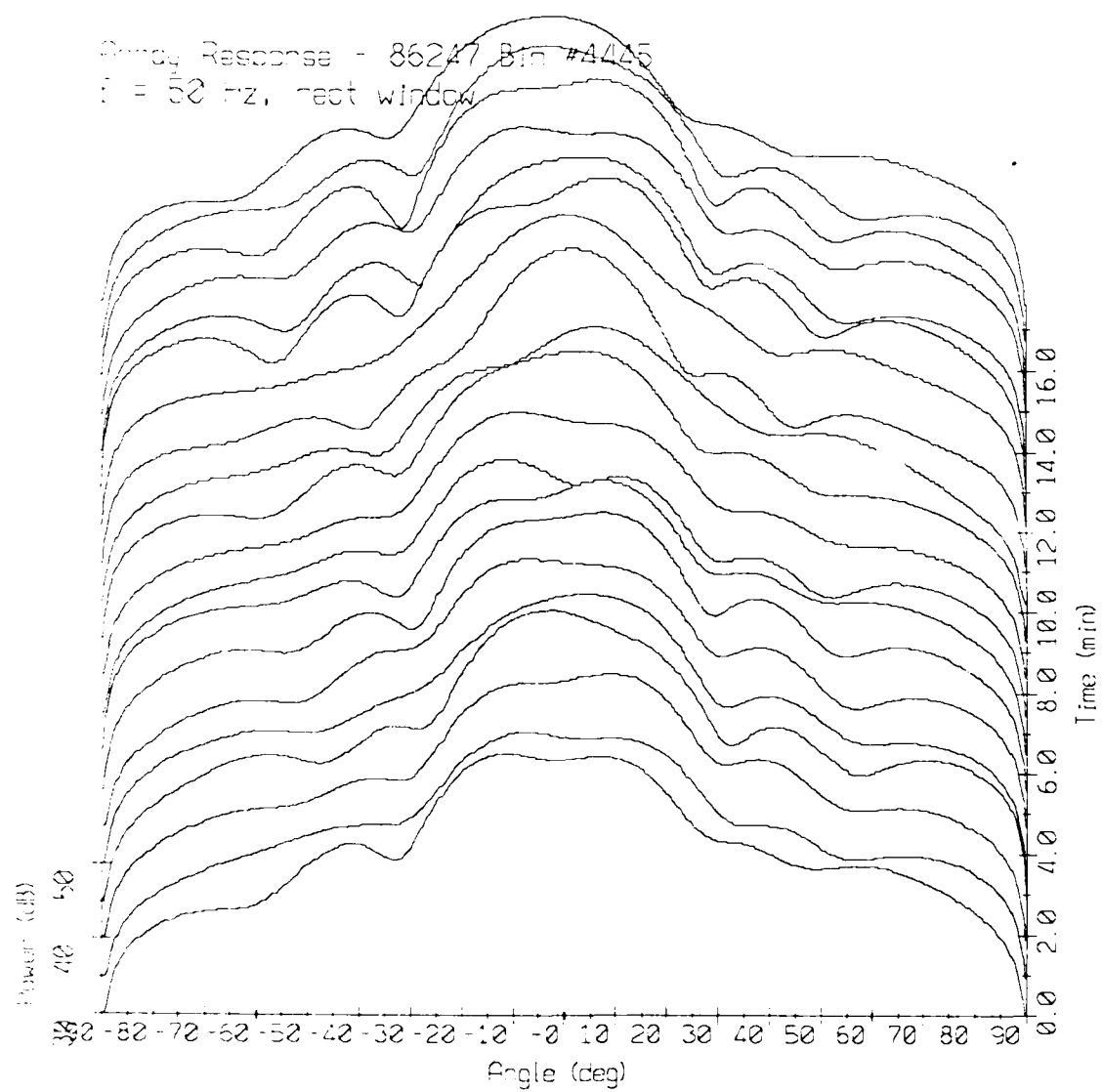


V. Array Response: Waterfall, Rect Window.

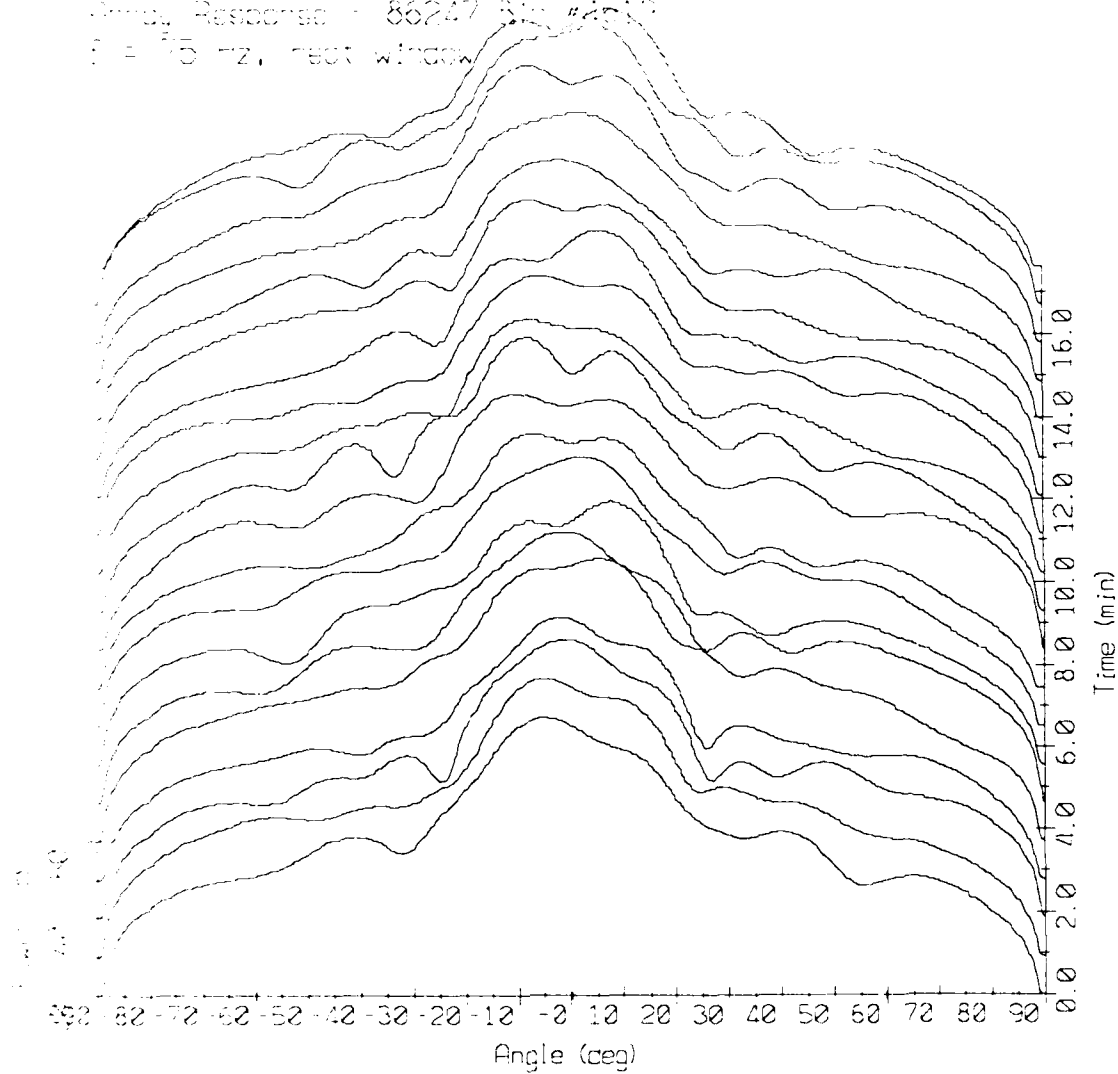


Array Response - 86247 Bin #4271  
 $f = 25$  Hz, rect window

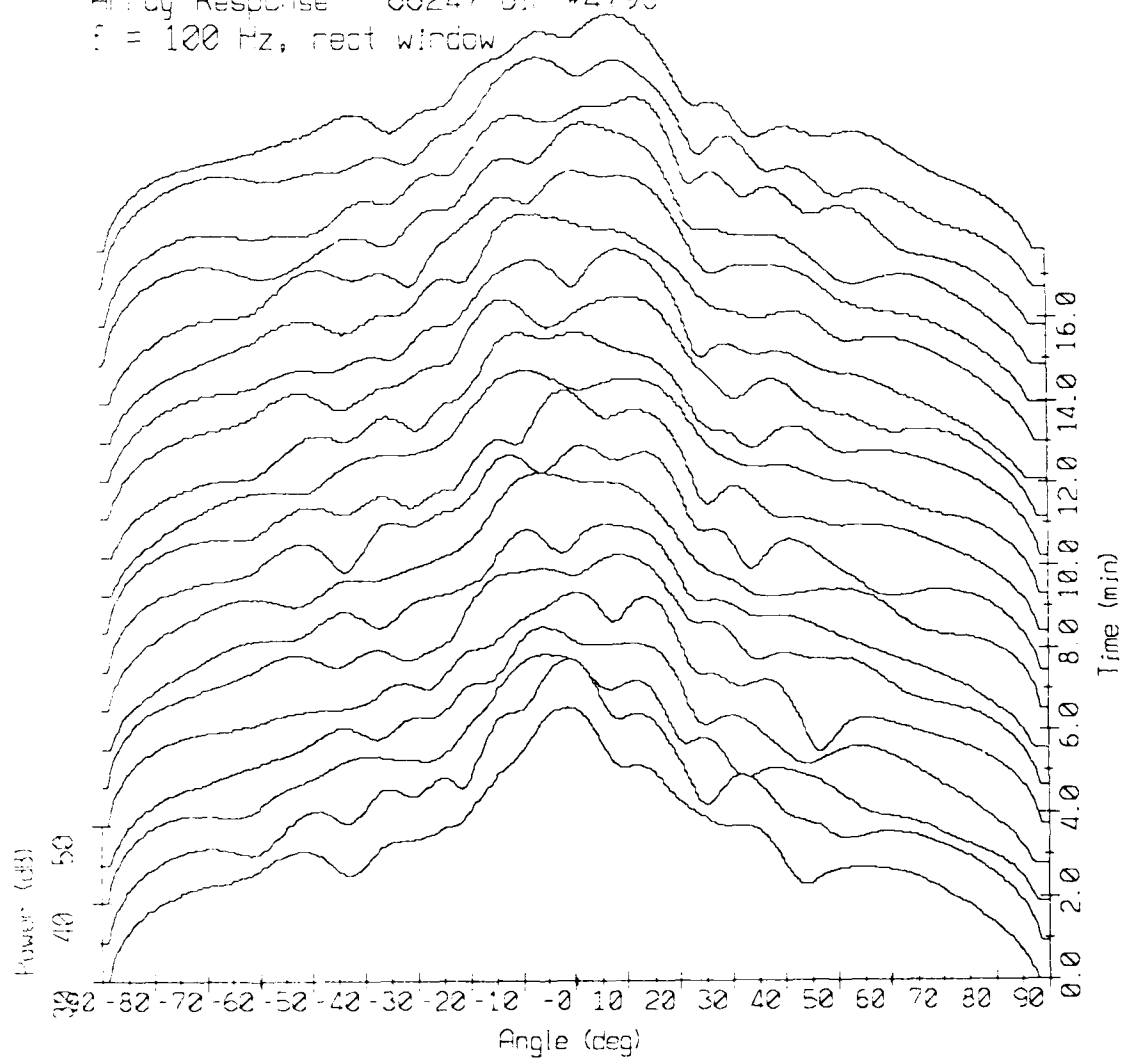




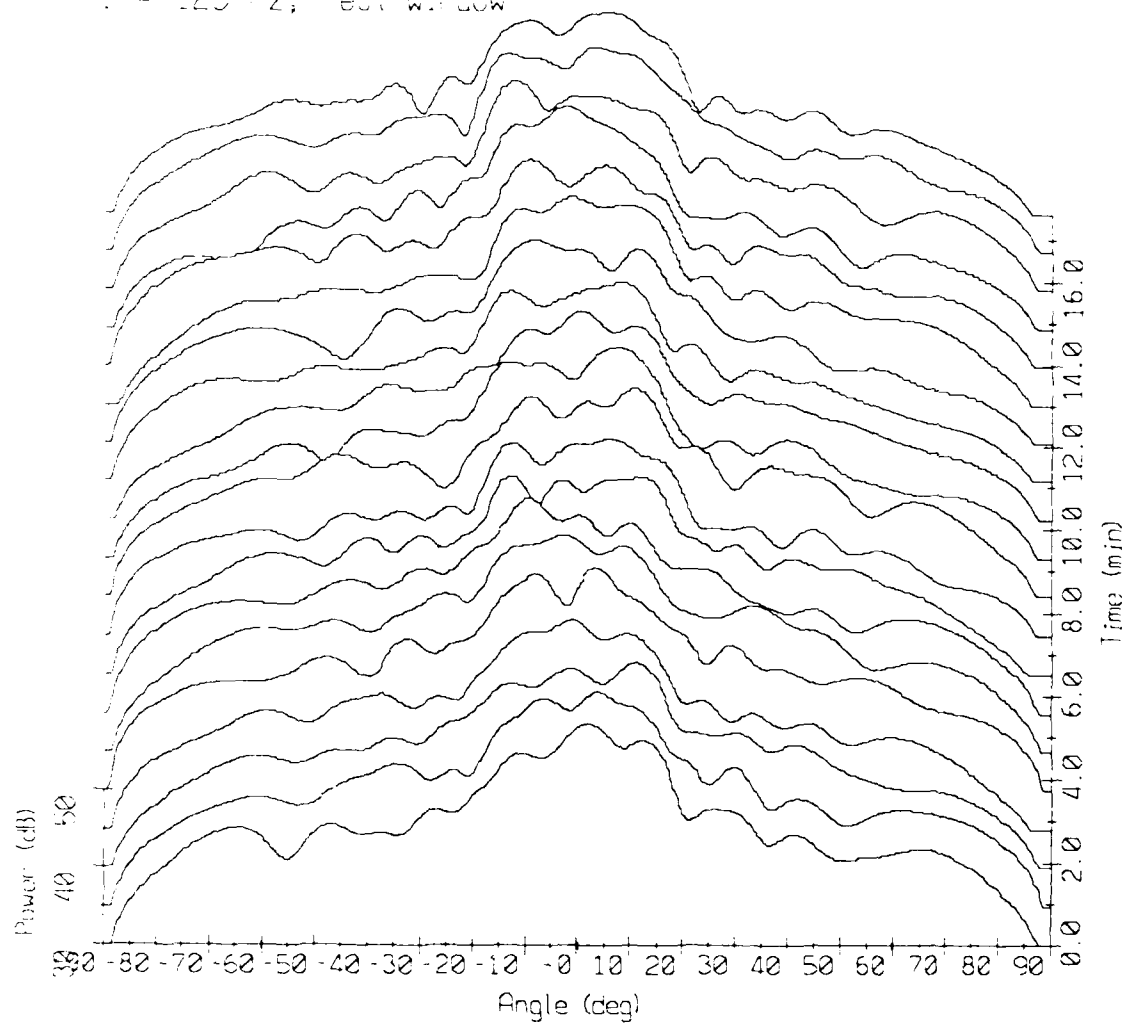
Ampl. Response - 86247 Sig #4510  
 $f = 10$  Hz, rect window



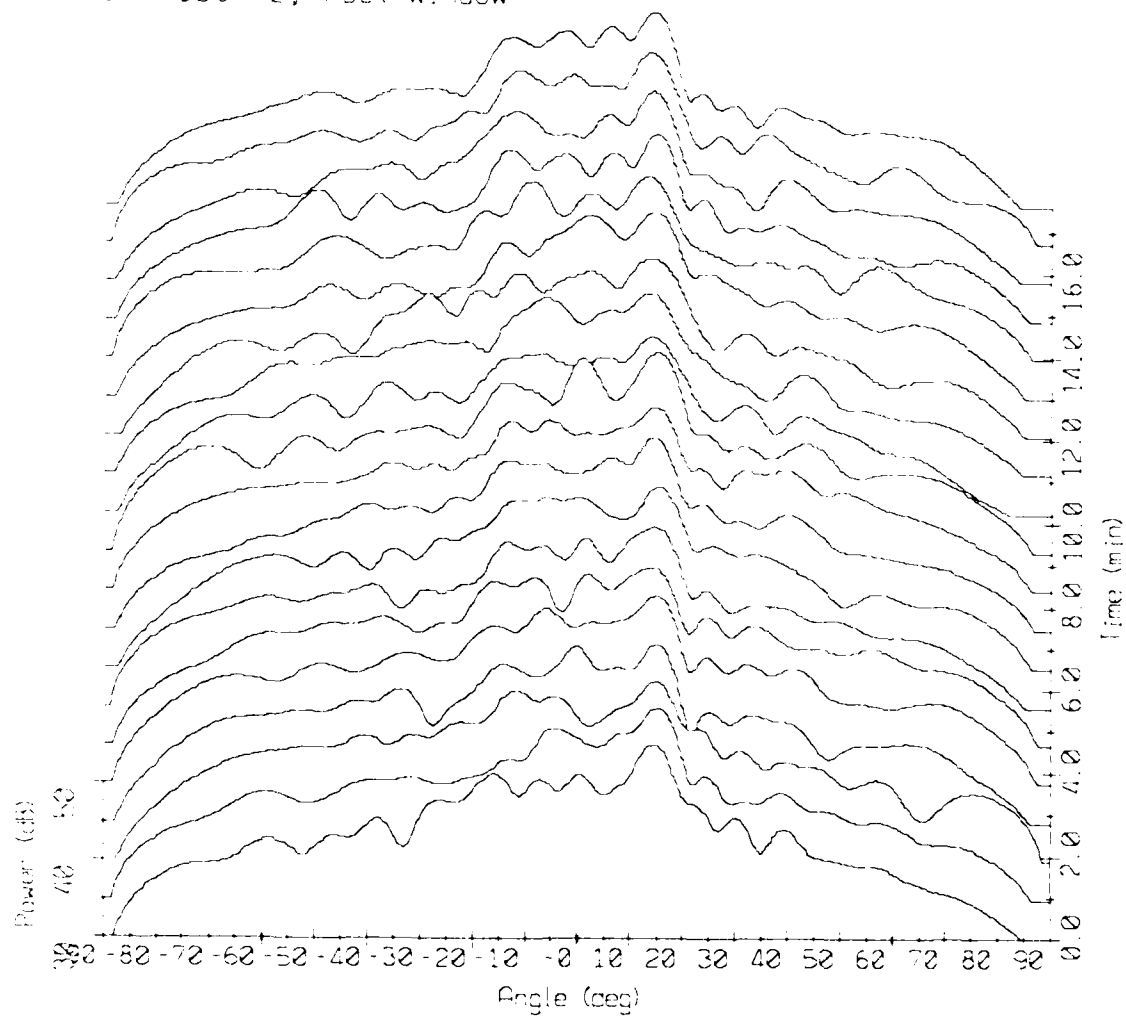
Array Response - 86247 Bin #4793  
 $f = 100$  Hz, rect window



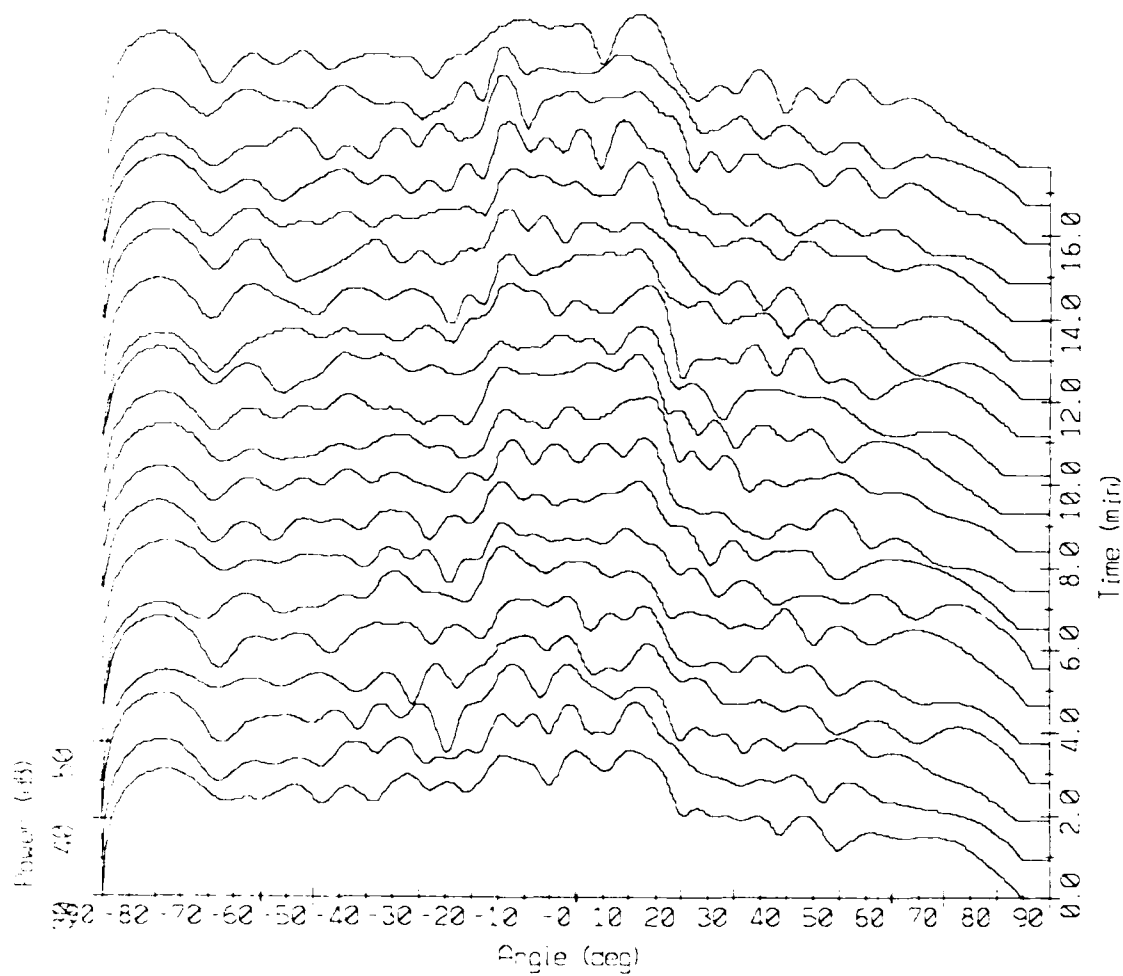
Power Response - 86247 Bin #4967  
 $f = 125$  Hz, test window



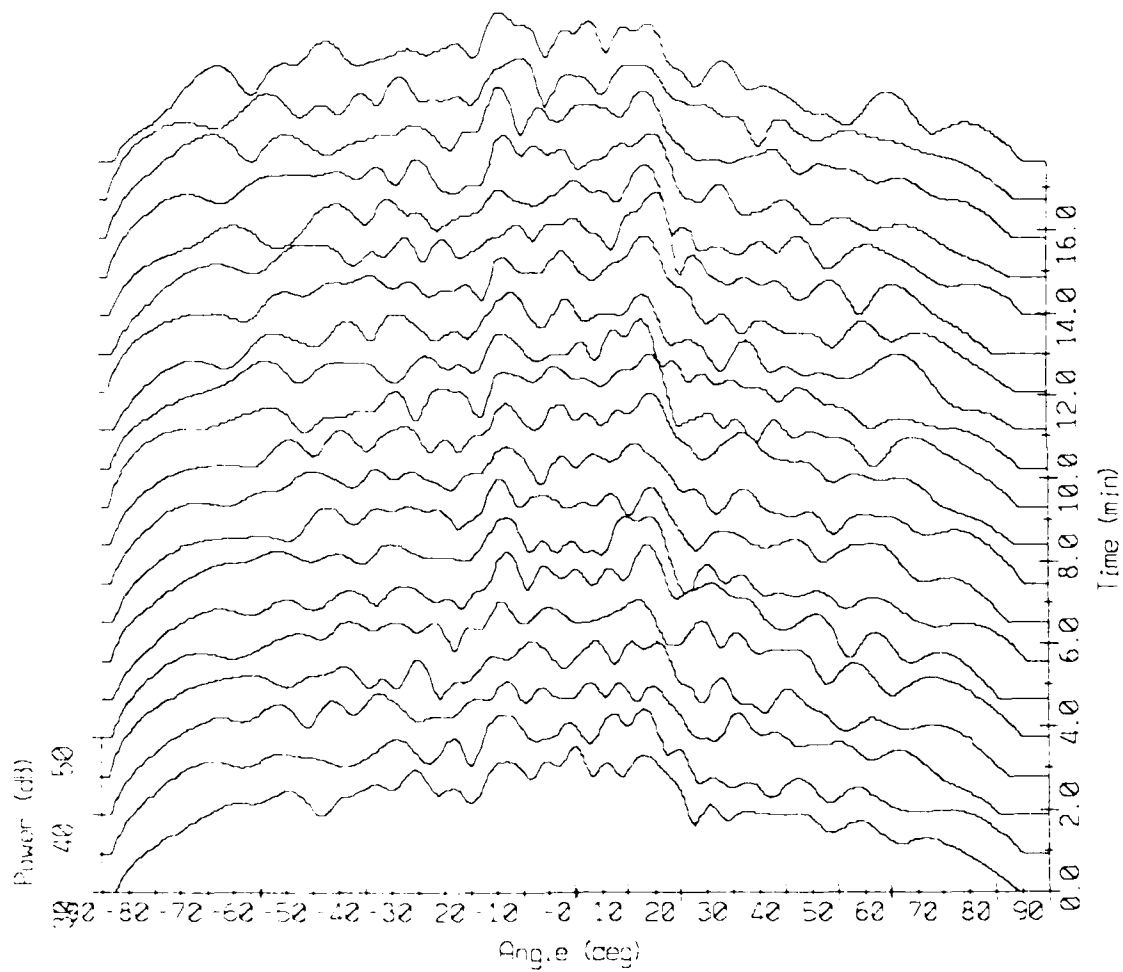
Array Response - 86247 S/n #5141  
 $f = 150$  Hz, rect window



Array Response - 86247 Bin #5316  
 $f = 175$  Hz, next window

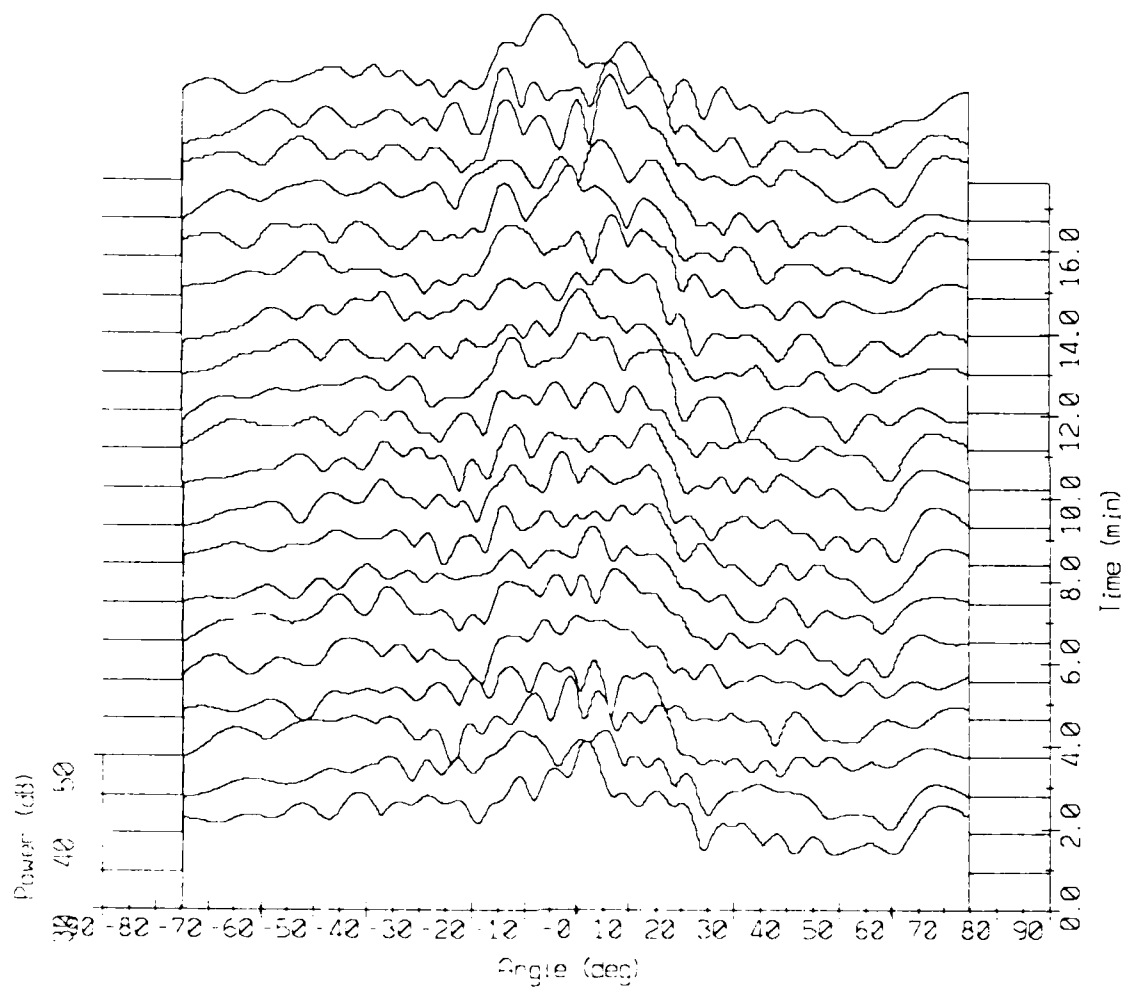


Acoustic Response - 86247 BIR #5490  
 $f = 222$  Hz, rect window

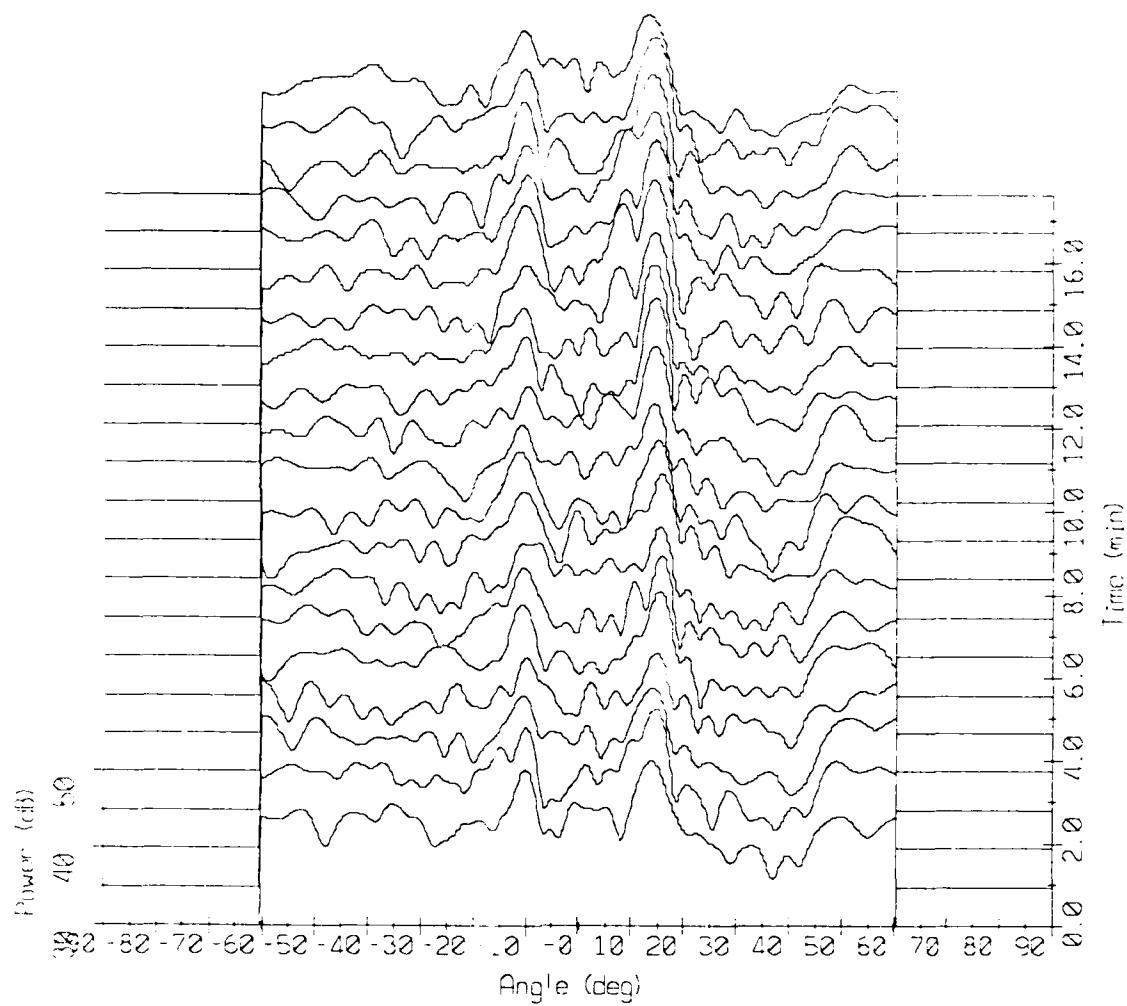




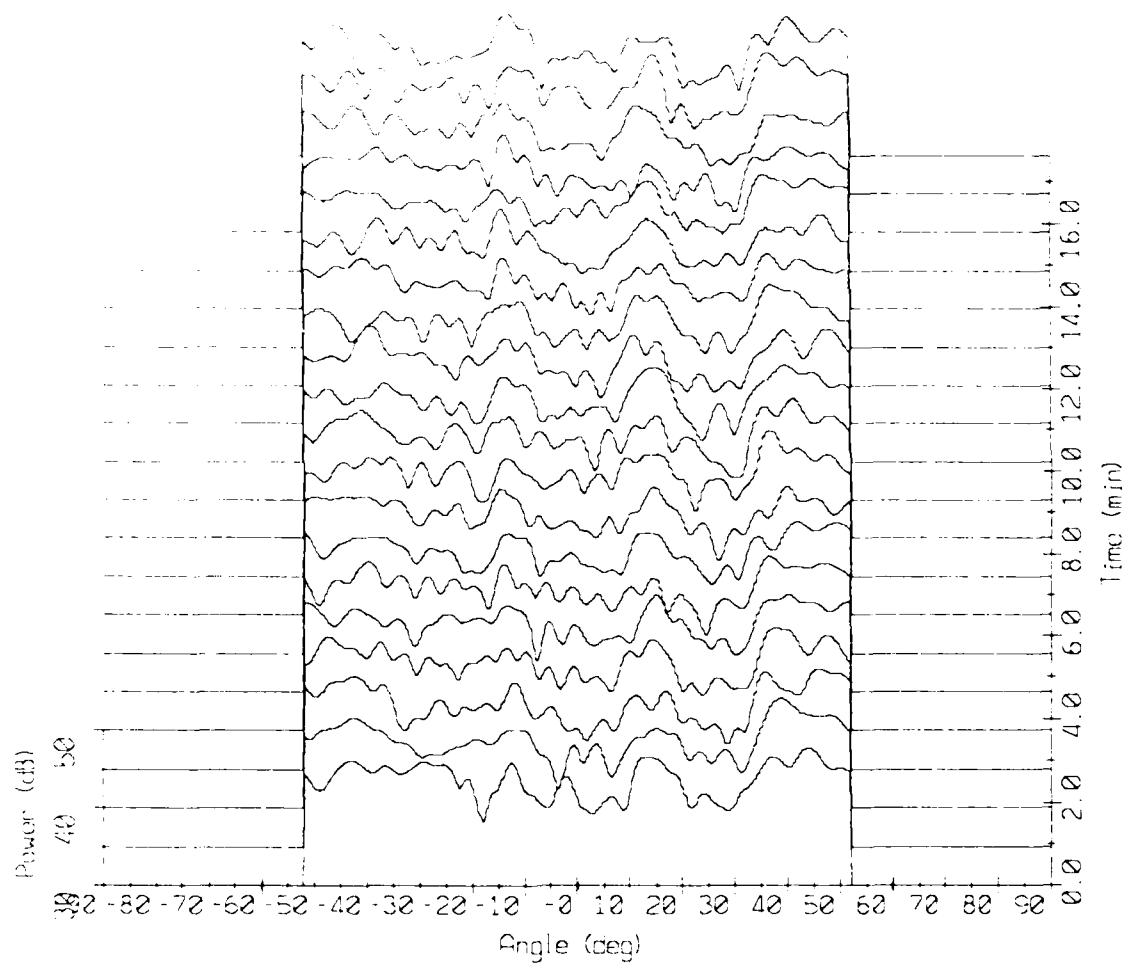
Array Response - 86247 Bin #5664  
 $f = 225$  Hz, rect window



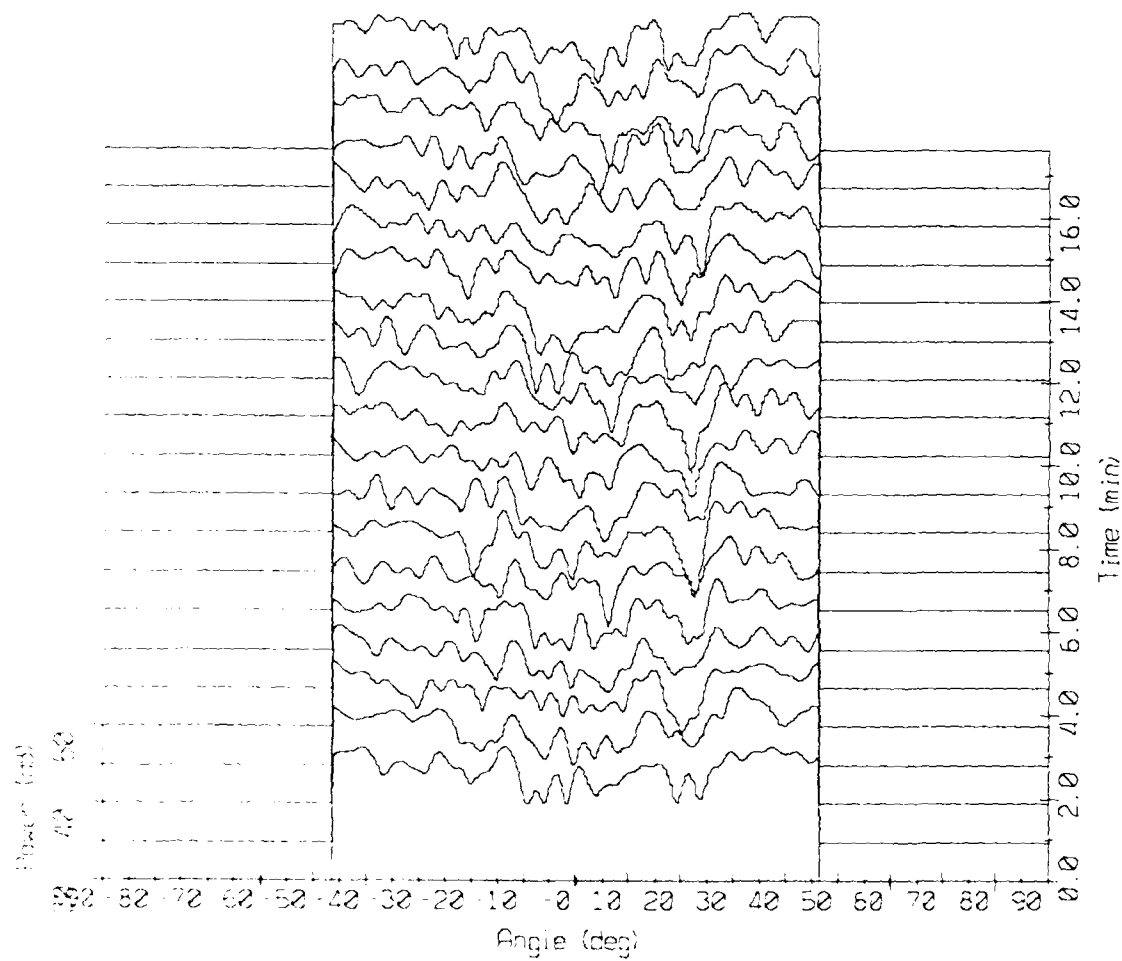
Acoustic Response - 86247 Bin #5832  
 $f = 250$  Hz, rect window



60712-51 #6012  
100.0000 window

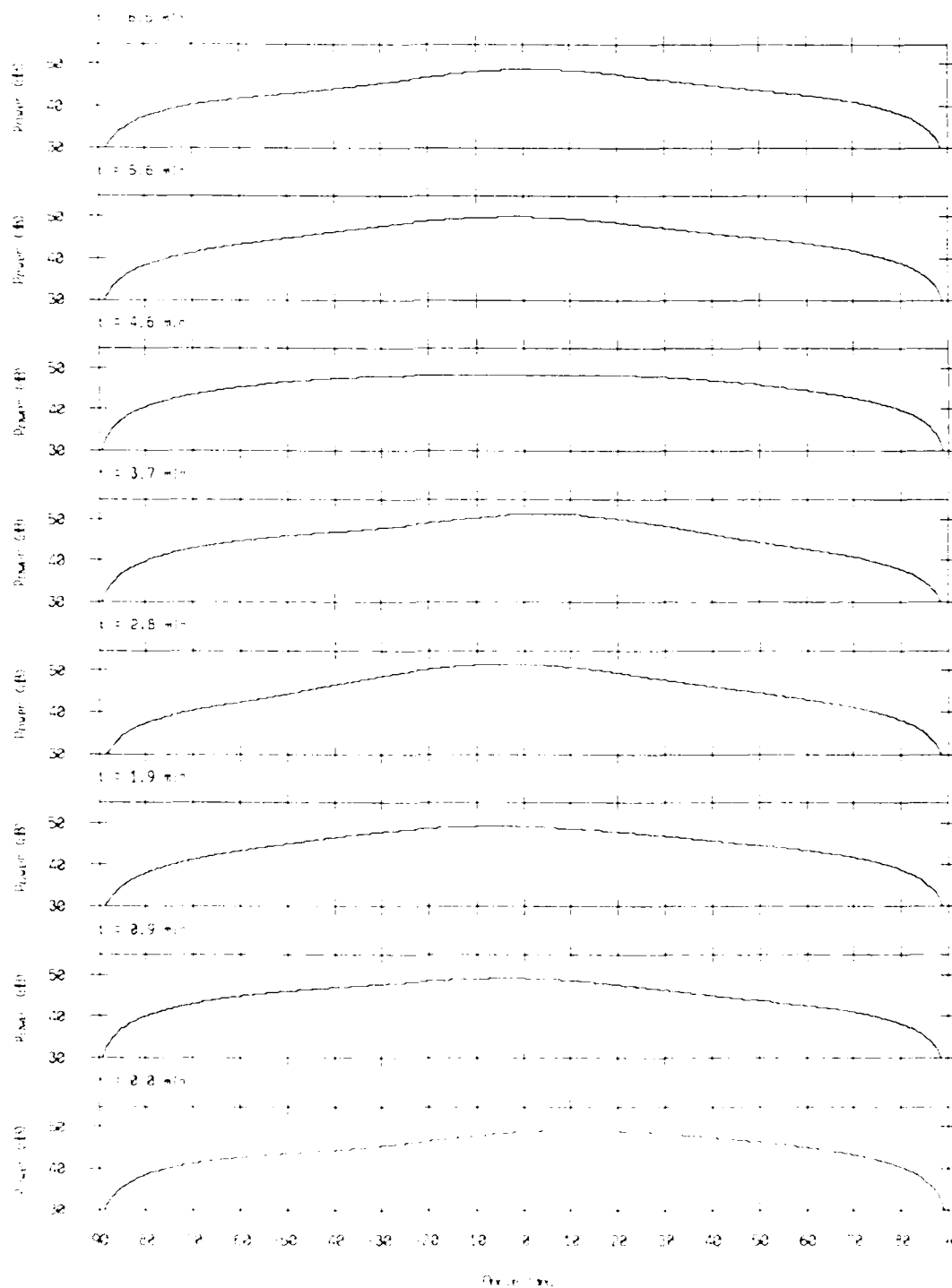


Array Response - 86247 Bin #6186  
 $f = 300$  Hz, rect window



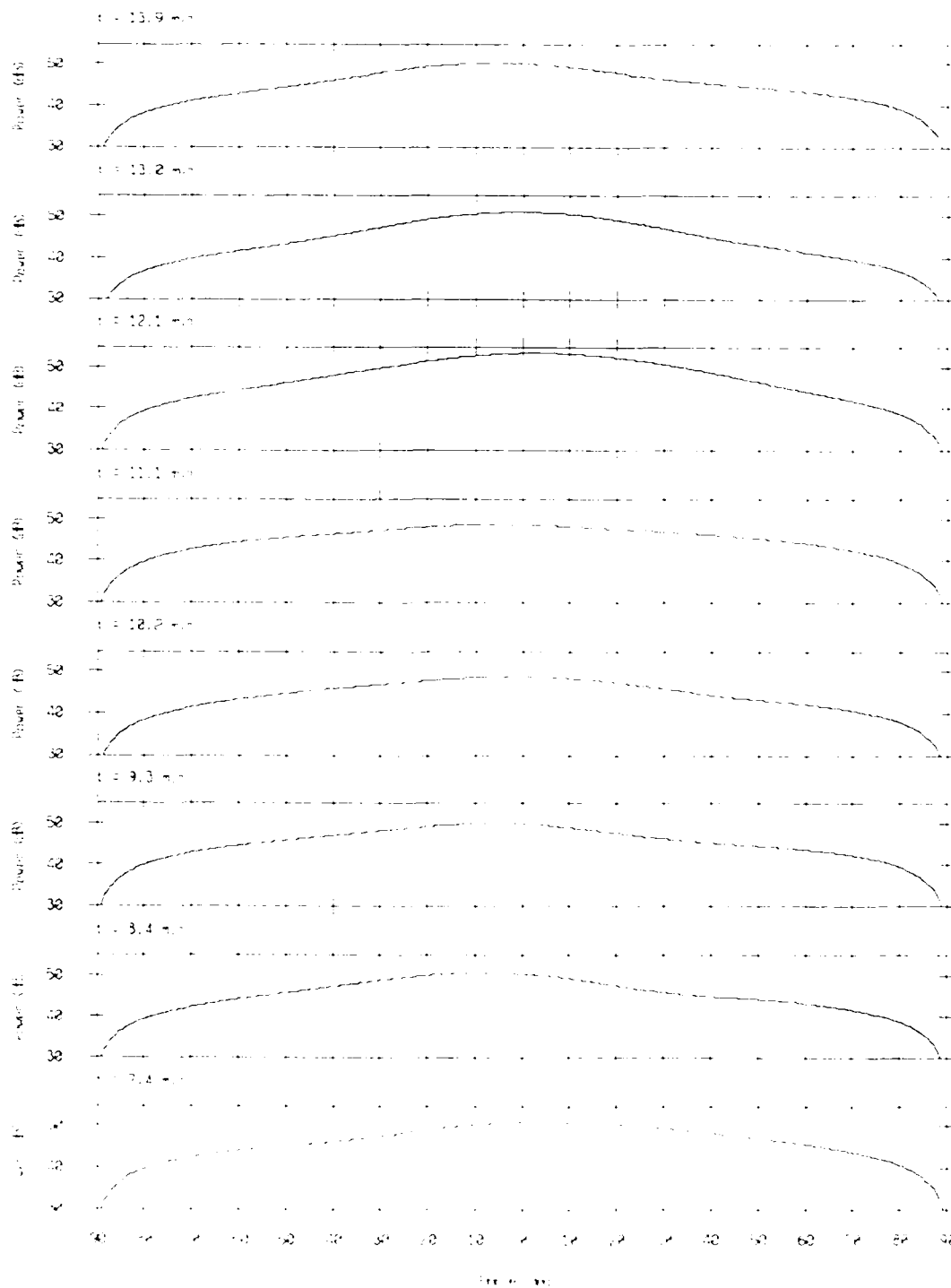
VI. Array Response: Panels, KB Window.

Array Response - 86247 Bin #4271  
 $f = 25$  Hz, K8 window (alpha = 1.5)



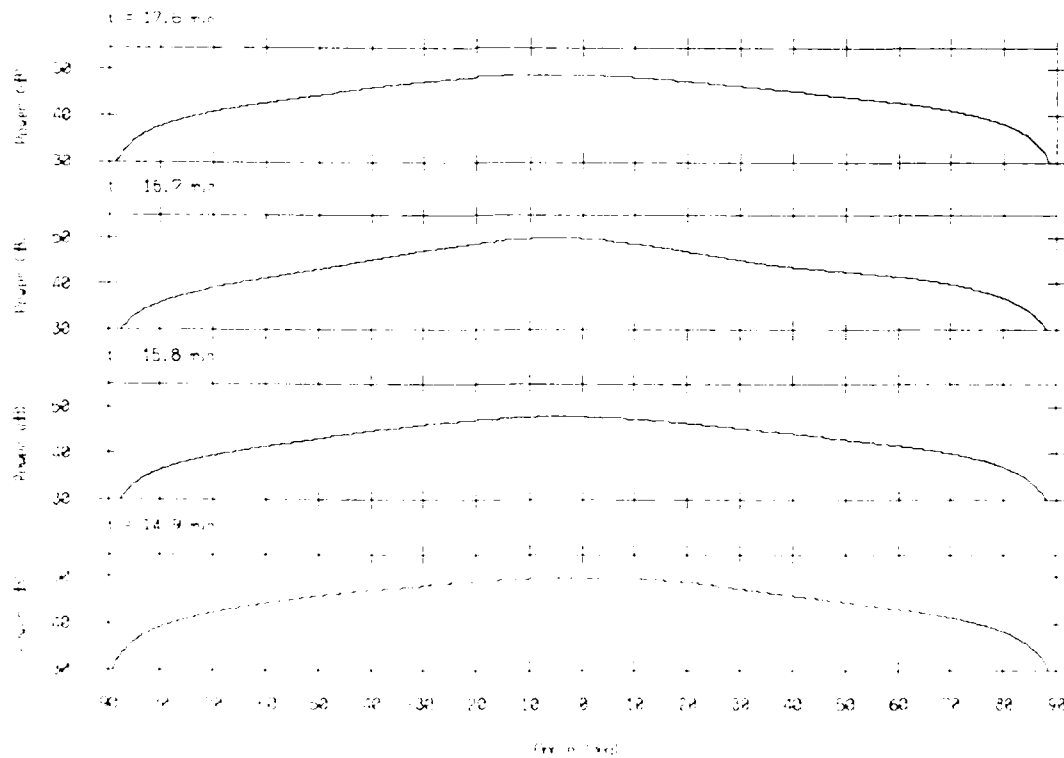
Orion Research - 86247 31r #4271

$f = 25 \text{ Hz}$ ,  $\Delta \phi$  window (alpha) = 1.5



Array Response = 86247 31° #4271

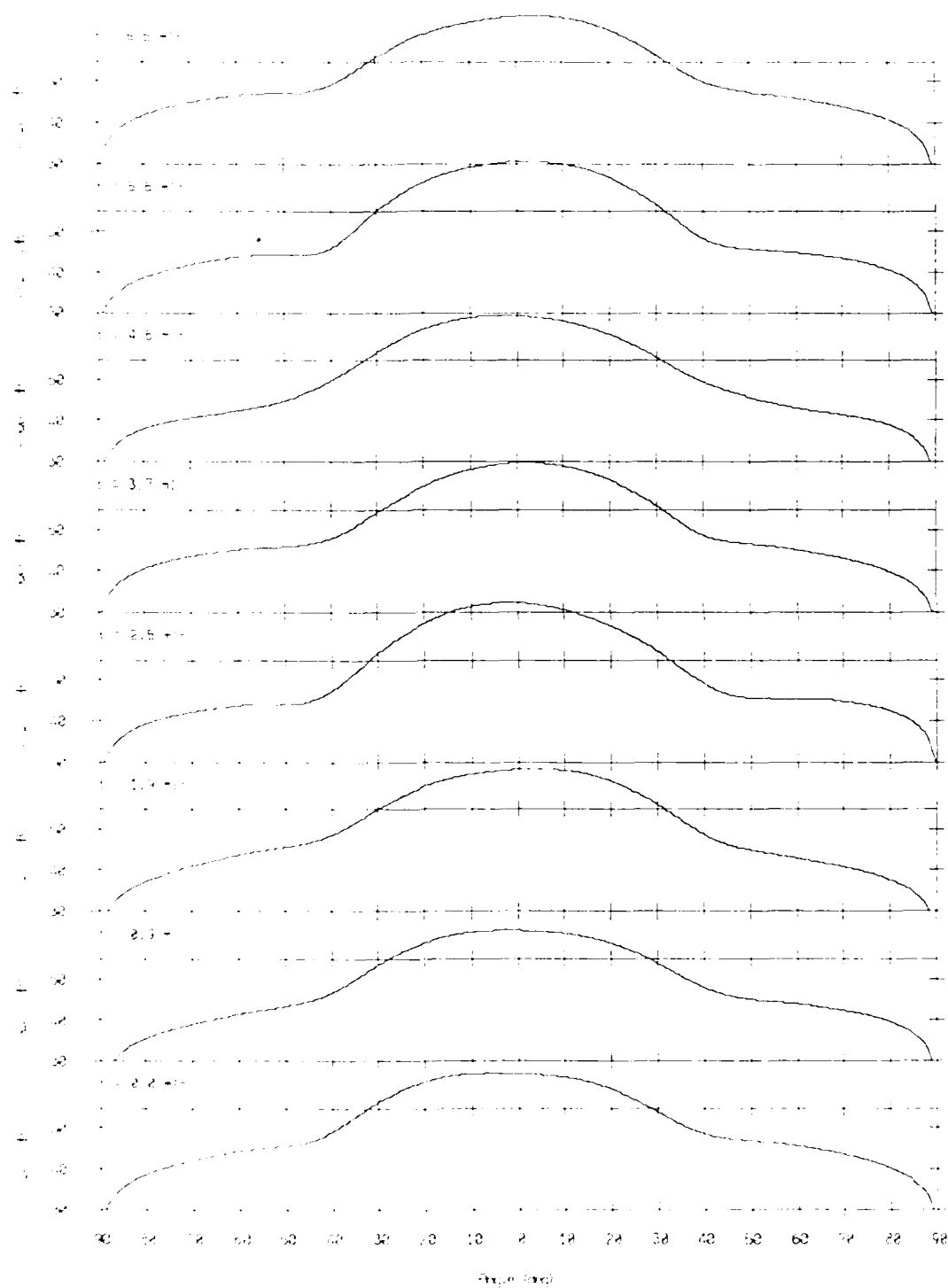
$f = 25$  Hz, <B window (alpha = 1.5)



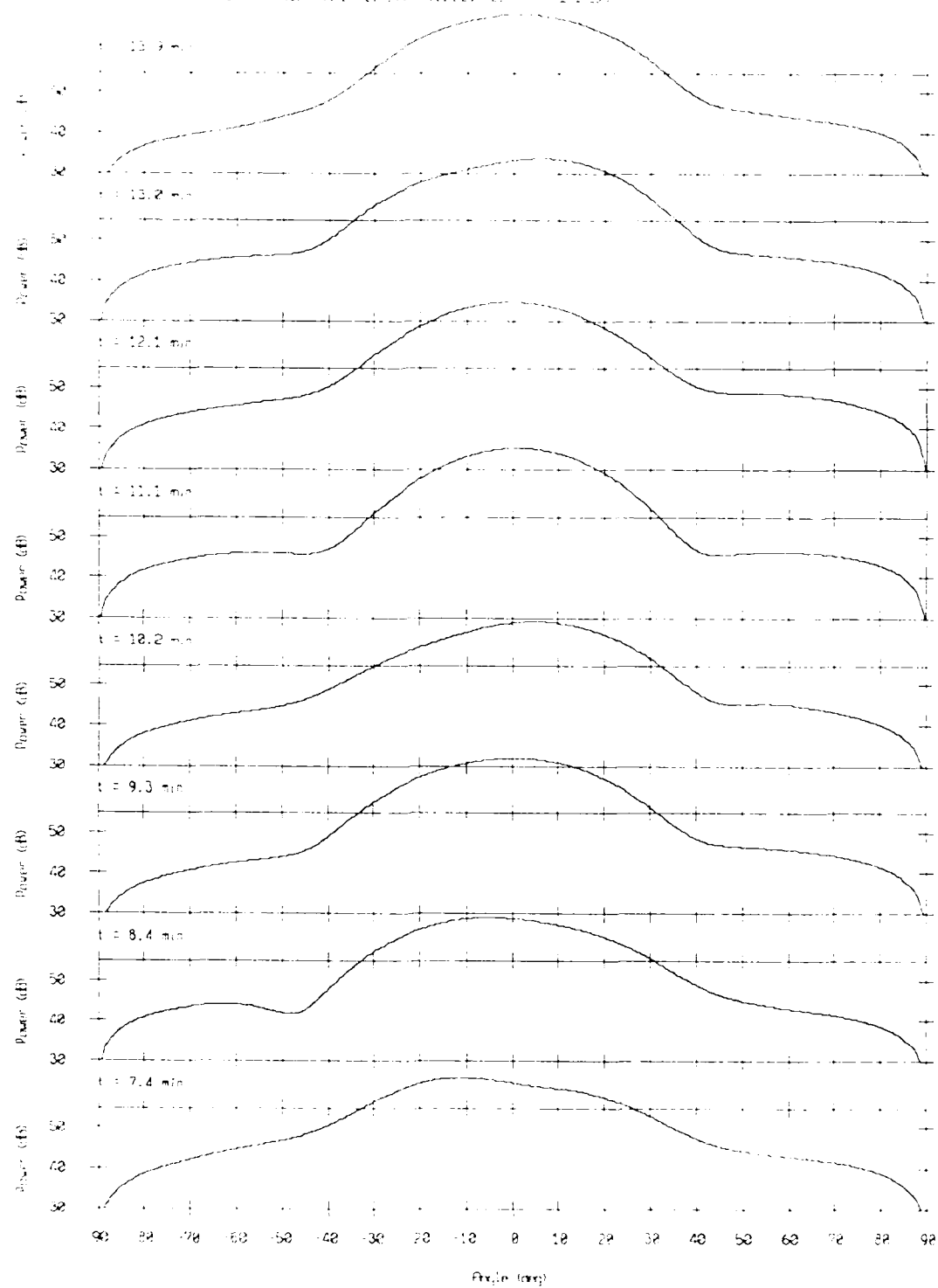


Final Reference - 862.73 in #4445

100 Hz, 8 window (alpha = 1.5)

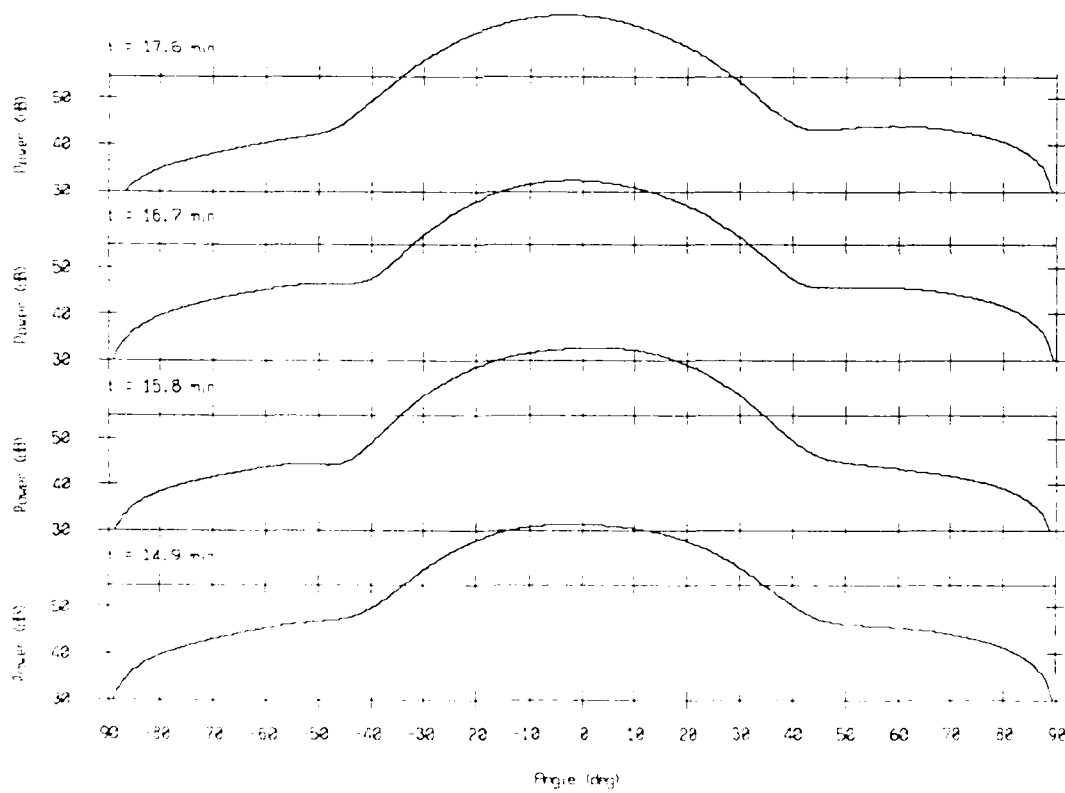


Period: 13.9 min  
 Frequency: 0.072 Hz  
 Amplitude: 1.8



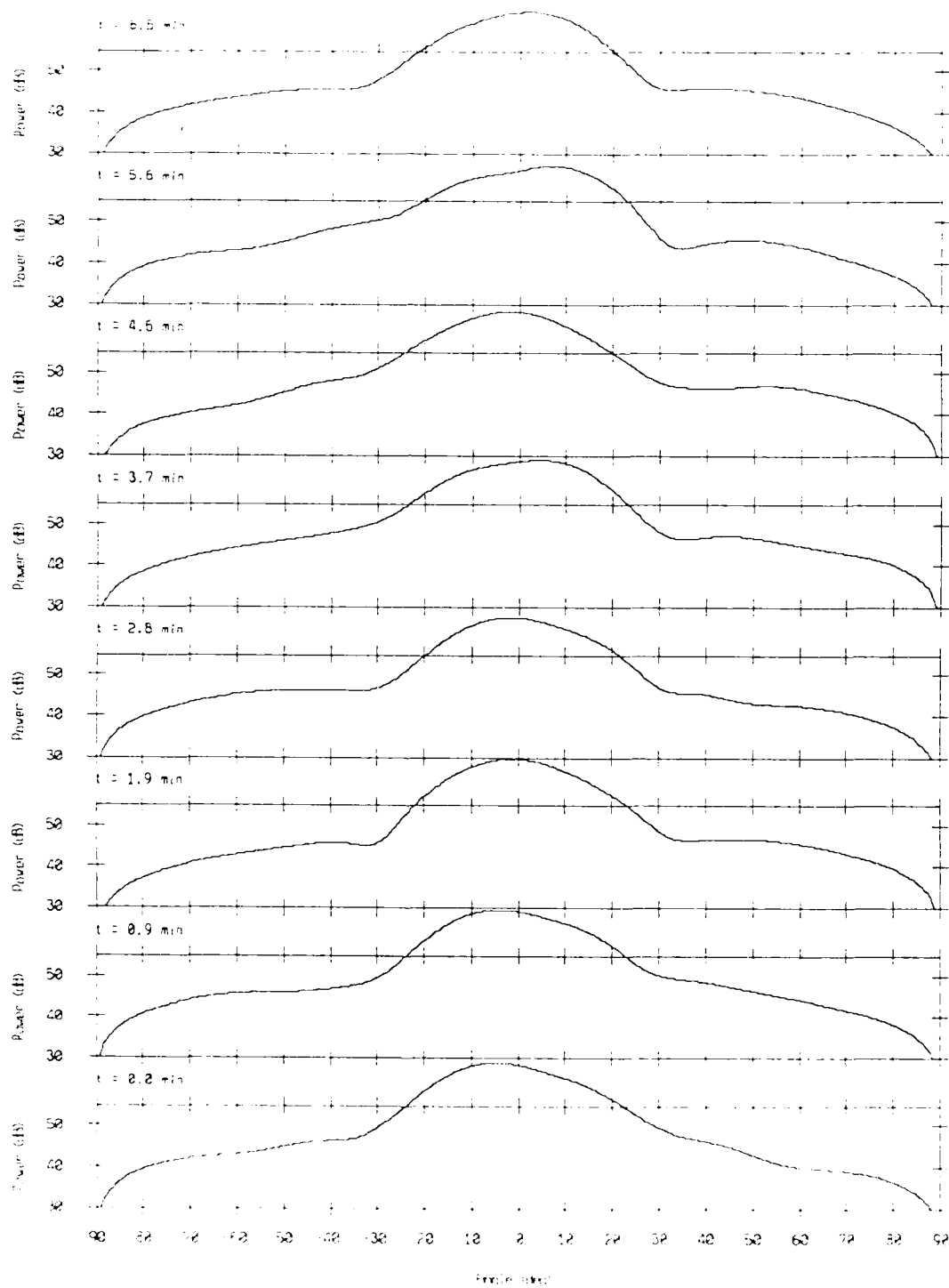
Grady, Response - 86247 Bin #11143

$f = 50$  Hz, KB window (alpha = 1.5)



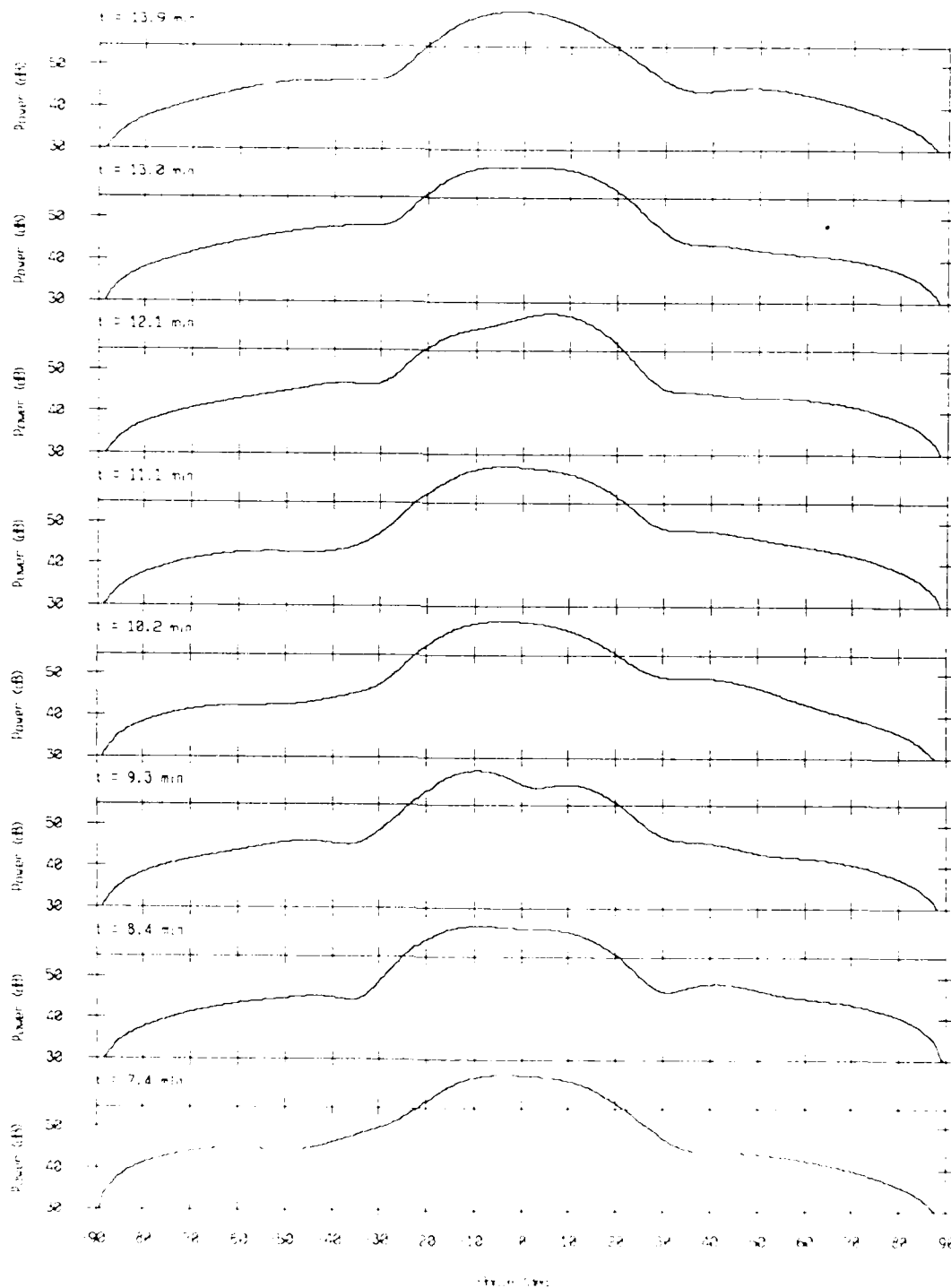
Pin. Resonance 86247 31# #4619

$f = 75$  Hz,  $\Delta f$  window (s.p.s) = 1.5)



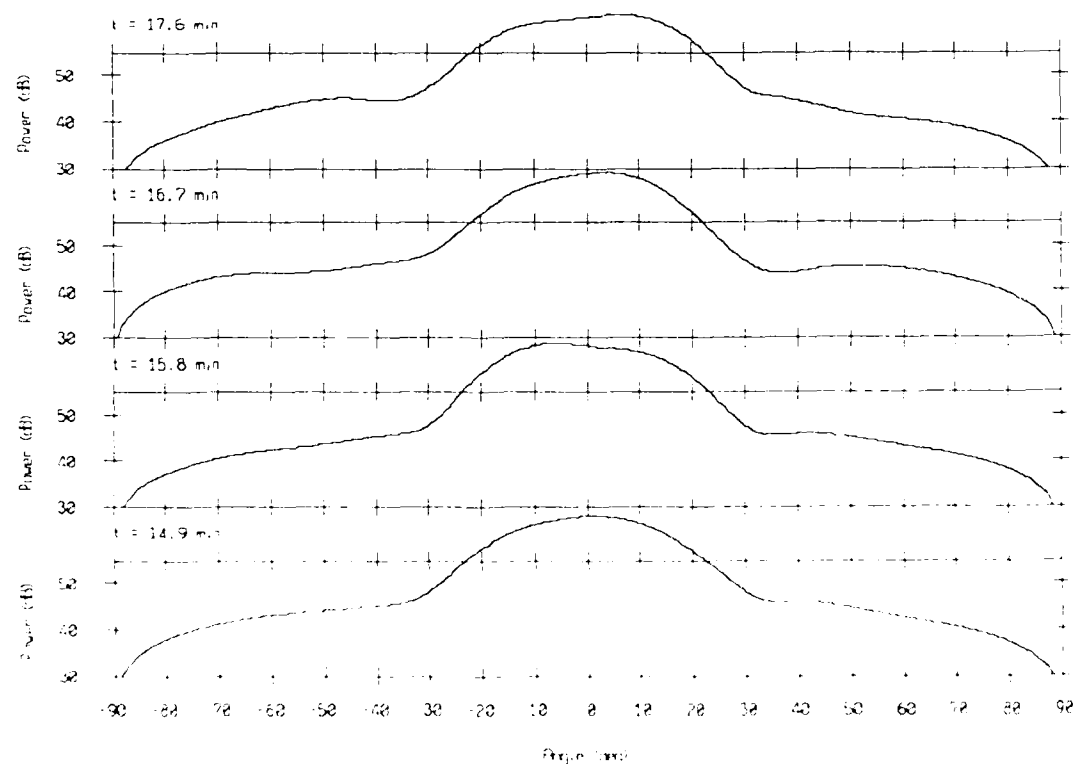
Barry Response - 86247 31- #4619

$f = 75$  Hz,  $\Delta B$  window (alpha = 1.5)



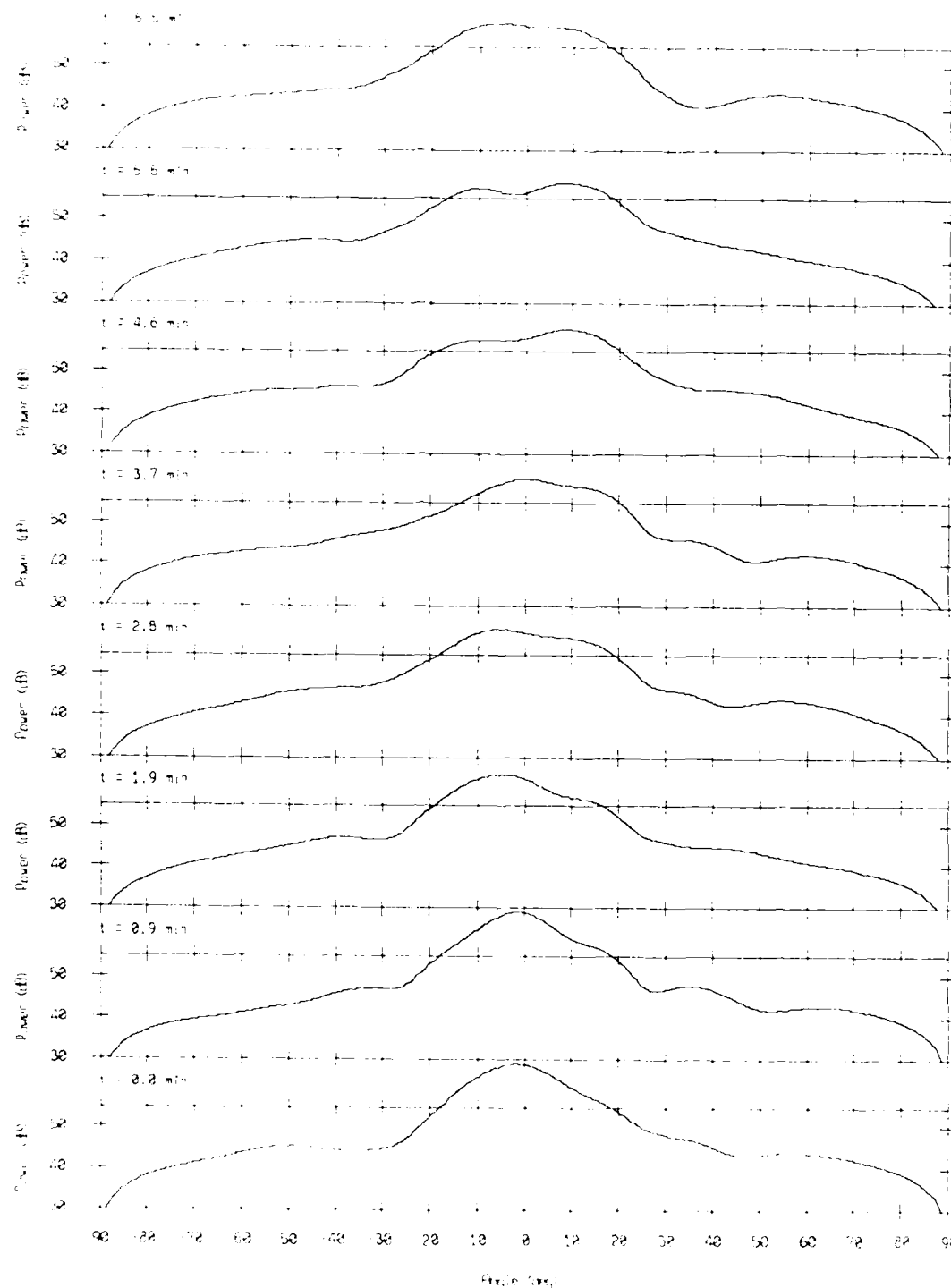
Primary Resistor on - 88240 9/17 #0619

$f = 75$  Hz, KS Window Length = 1.5.



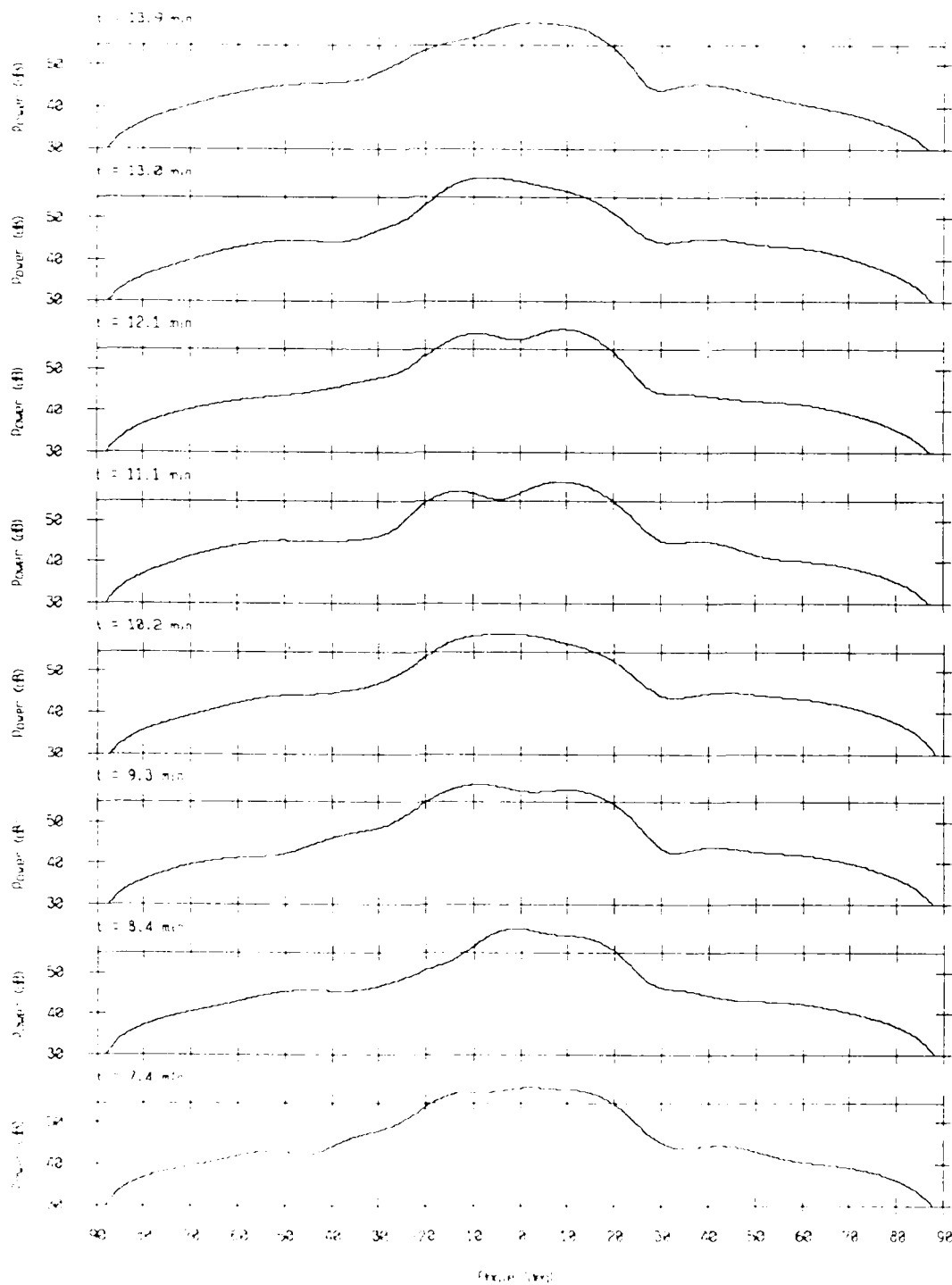
Power Spectrum 86247 Bin #4798

$f = 120$  Hz,  $\Delta f$  window (sigma = 1.5)



Power Spectra 80247 51# 4/7/83

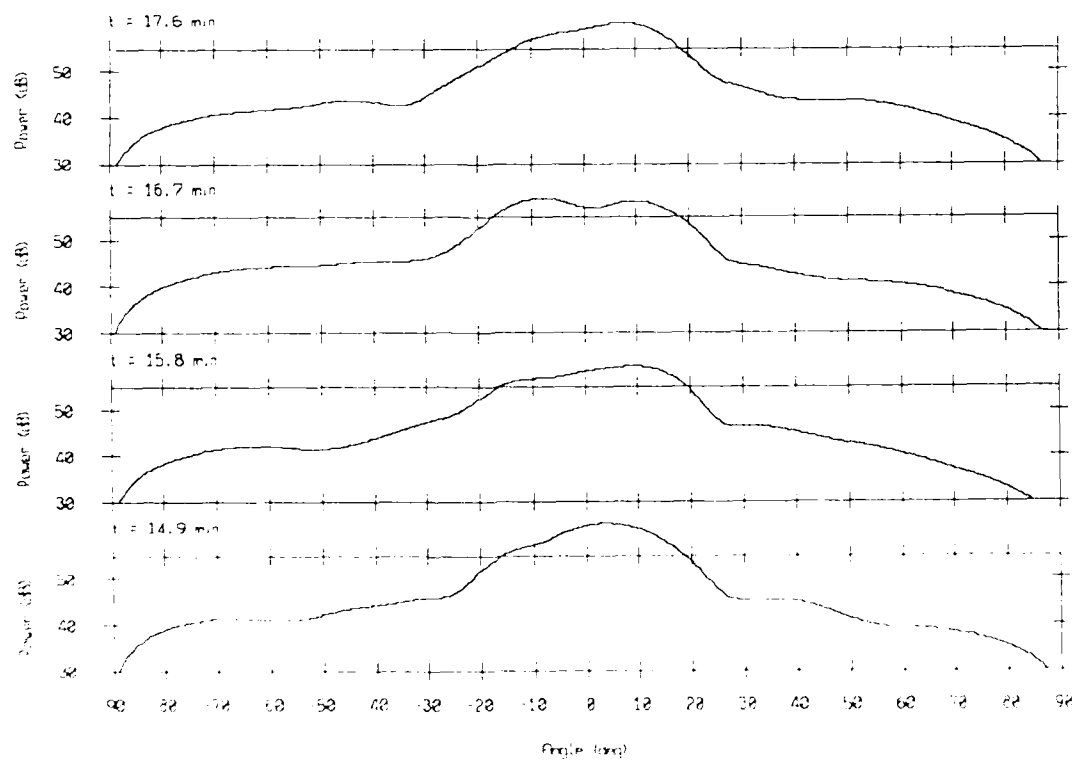
$f = 100$  Hz, 48 Window (alpha = 1.5)





Study Response - 862.7 512 #4793

$f = 122 \text{ Hz}$ ,  $\langle S \rangle_{\text{thruw}} (\text{rms}) = 1.5$



# Figure 1. Frequency spectra of the noise recorded at the

different distances from the source of noise.

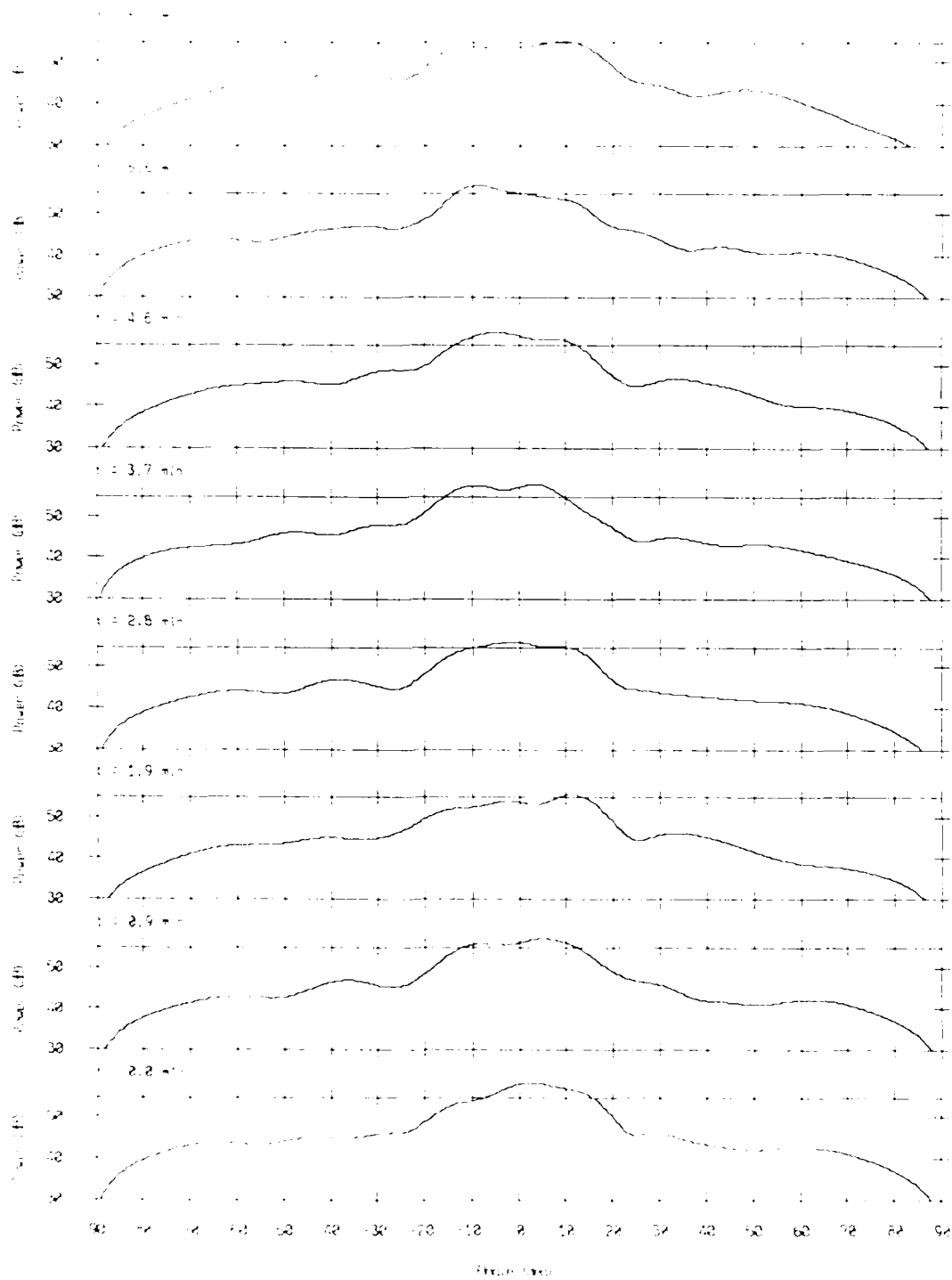
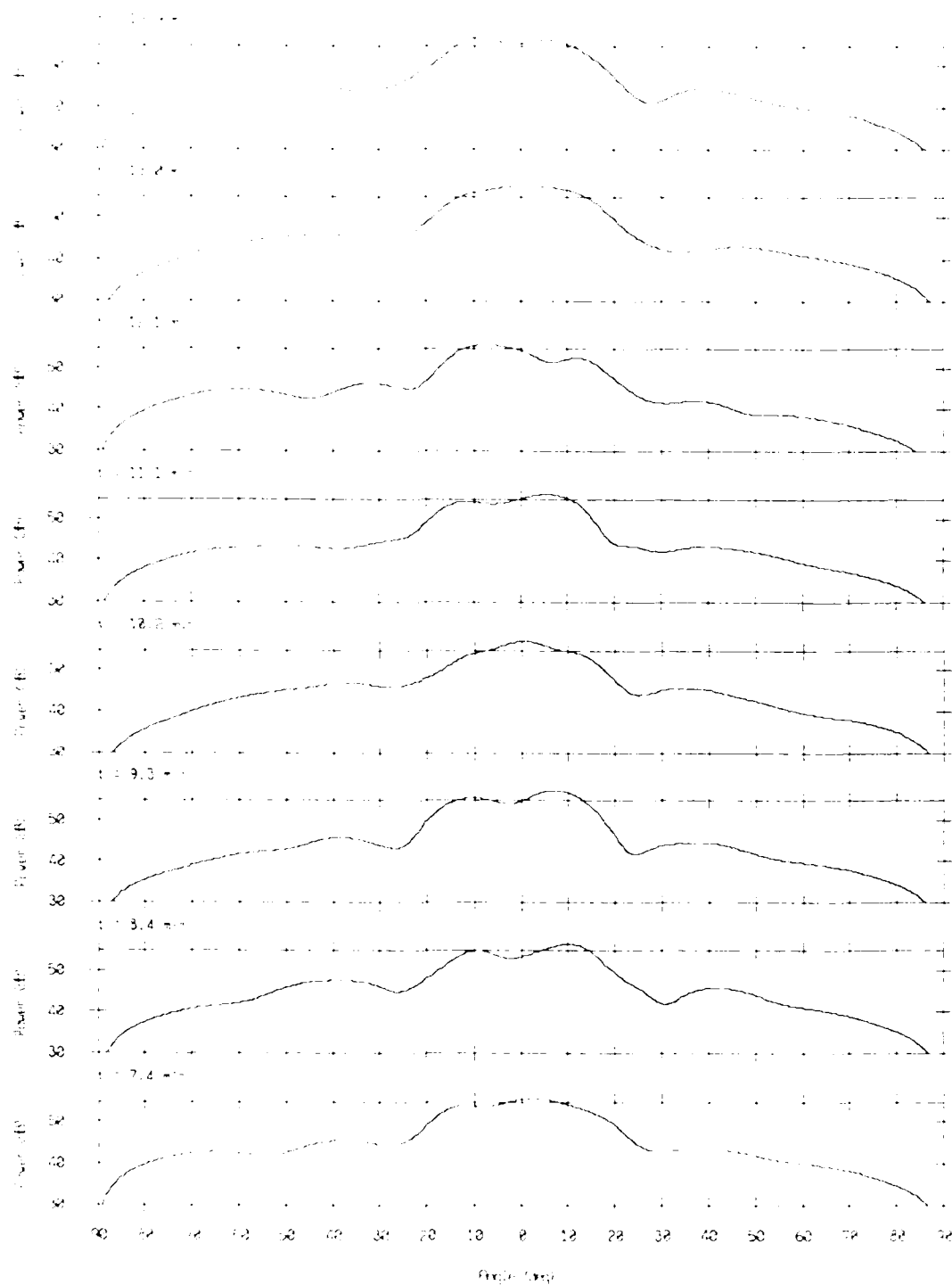
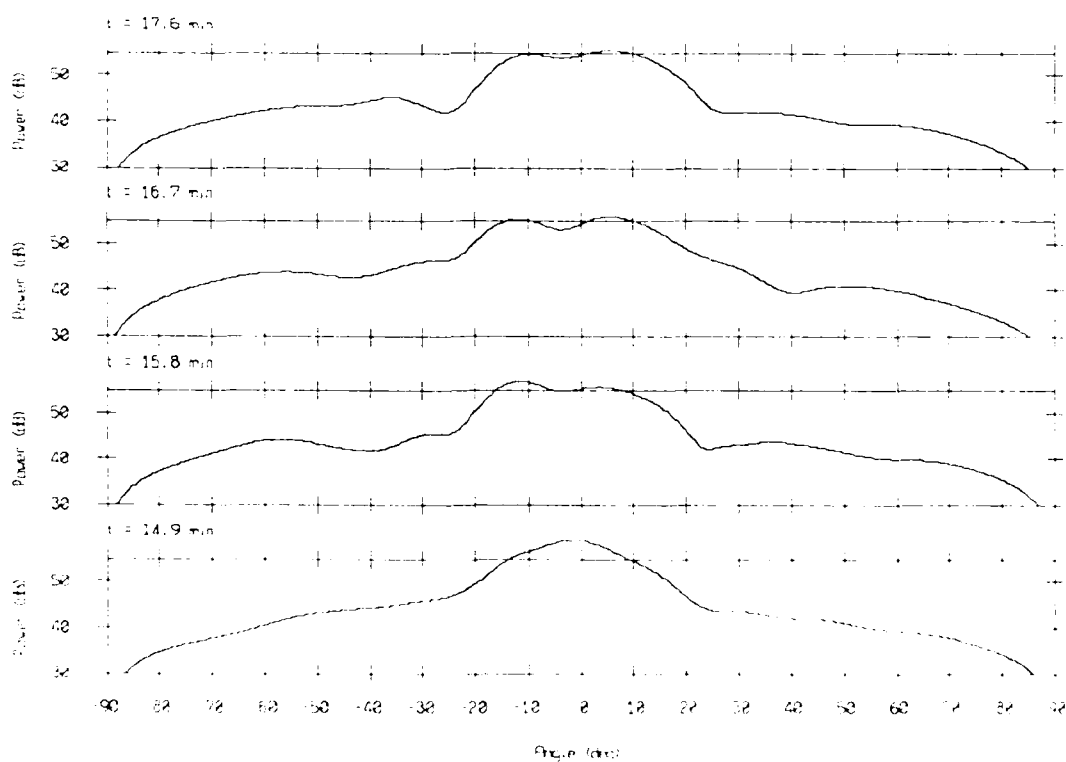


Figure 1. Power Spectral Density (PSD) of the input signal.

Figure 2. Power Spectral Density (PSD) of the output signal.

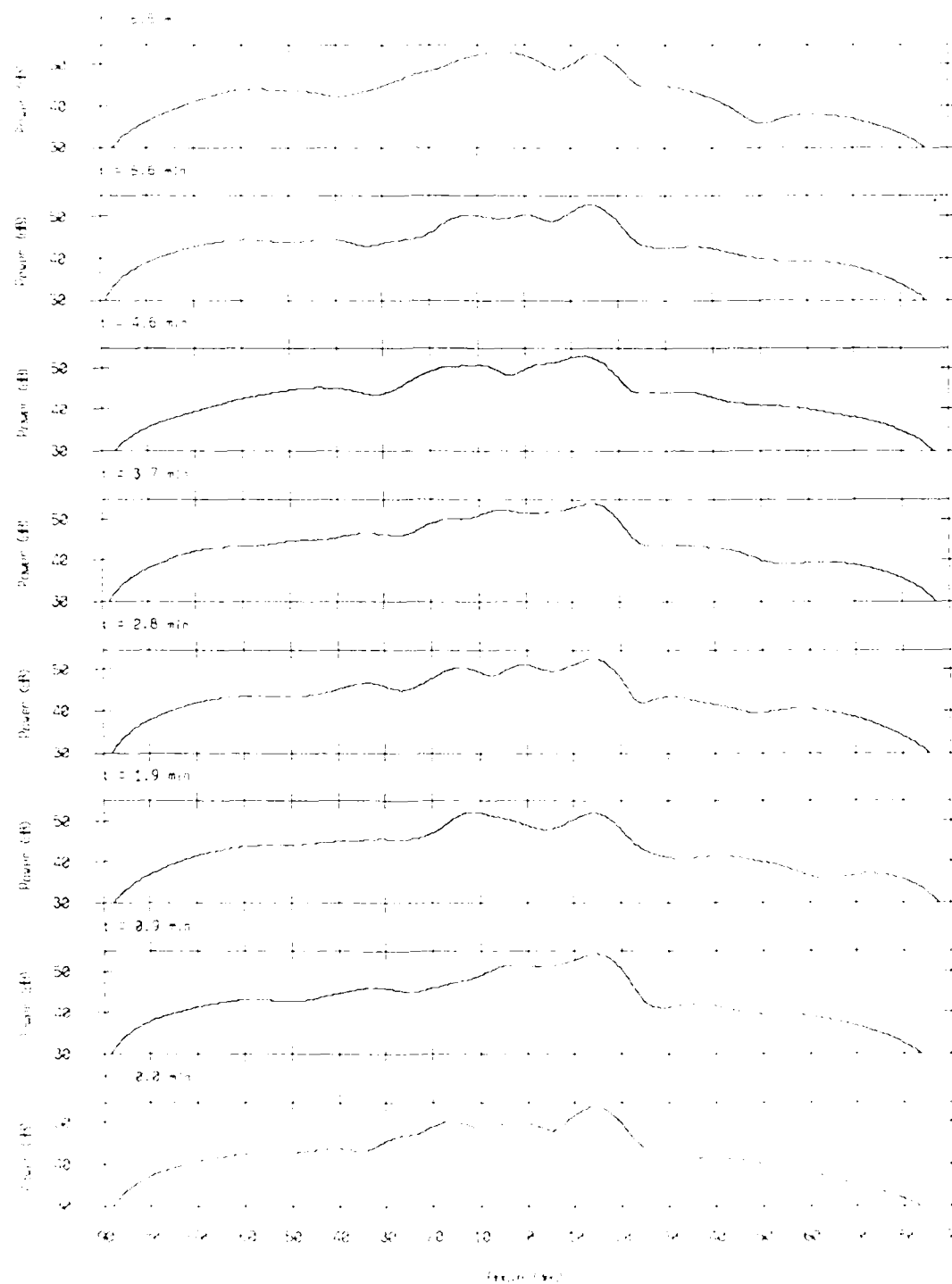


Power Spectra of 8000 Hz Sin #125  
 125 Hz, 45 Window (Area = 1.5)

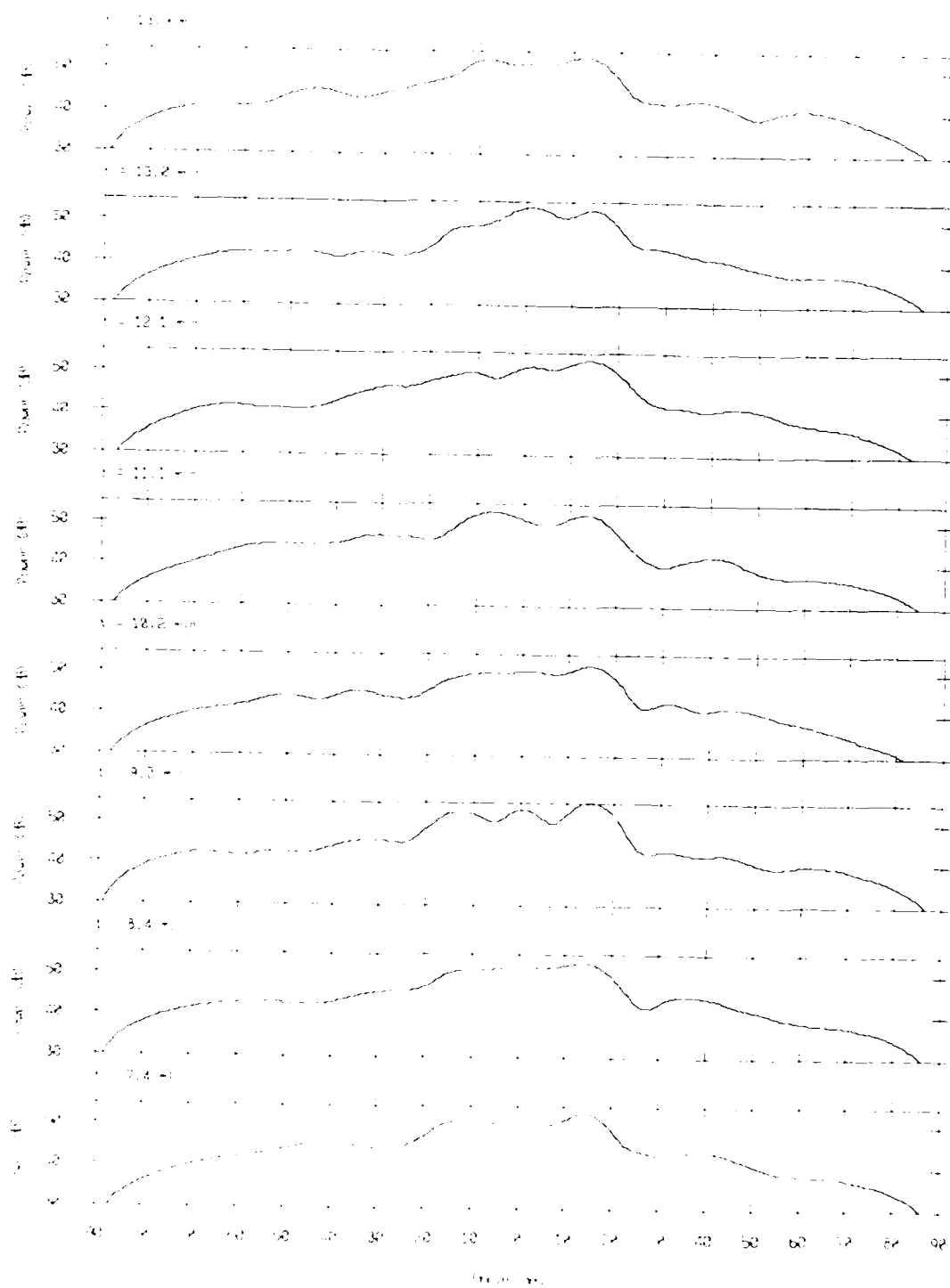


Flow, Power vs. RPM #5141

150 Hz, No Window (Speed = 1.8)



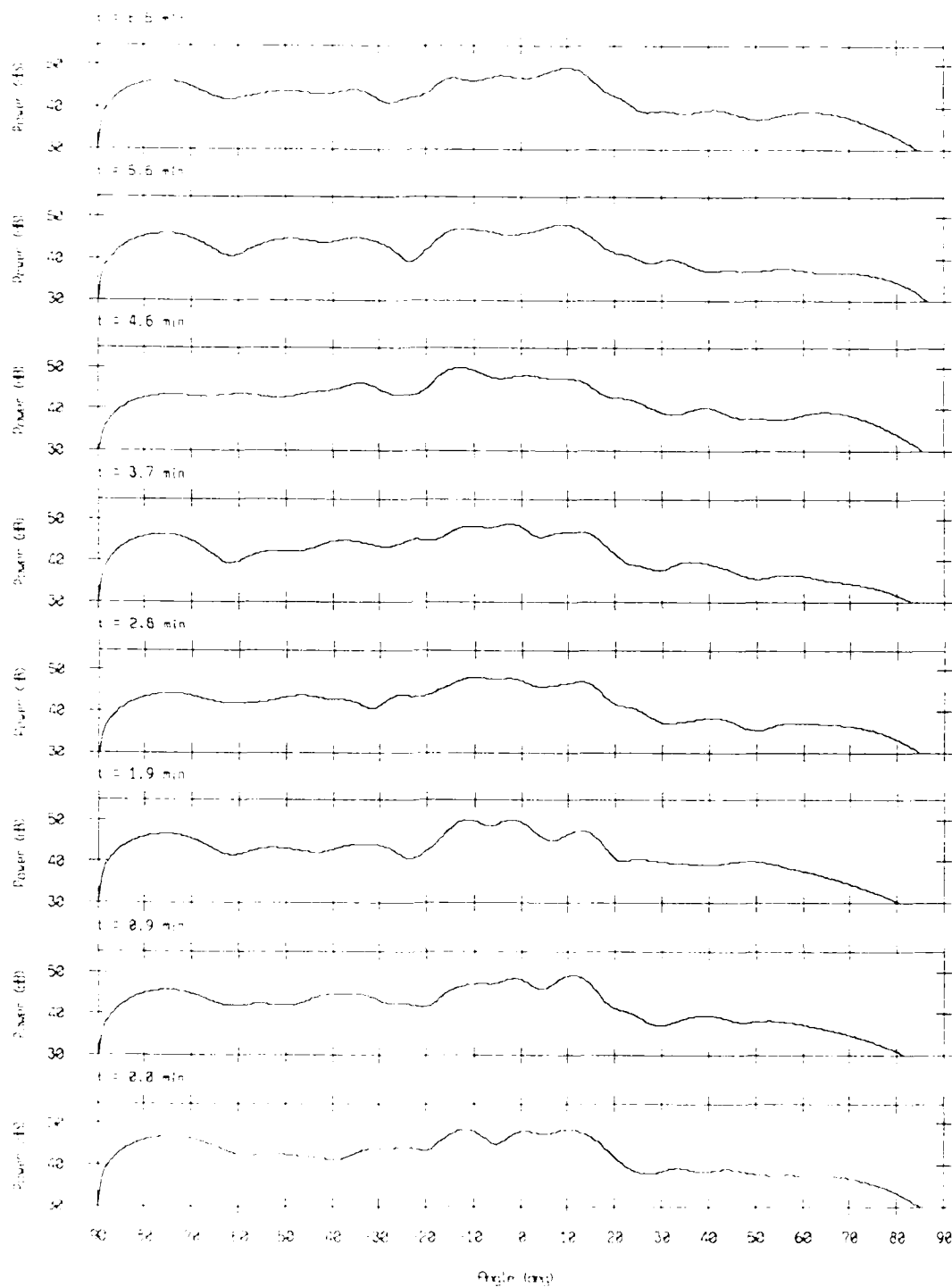
150-2, 150-3, 150-4, 150-5, 150-6, 150-7, 150-8, 150-9, 150-10, 150-11, 150-12, 150-13, 150-14, 150-15, 150-16, 150-17, 150-18, 150-19, 150-20, 150-21, 150-22, 150-23, 150-24, 150-25, 150-26, 150-27, 150-28, 150-29, 150-30, 150-31, 150-32, 150-33, 150-34, 150-35, 150-36, 150-37, 150-38, 150-39, 150-40, 150-41, 150-42, 150-43, 150-44, 150-45, 150-46, 150-47, 150-48, 150-49, 150-50, 150-51, 150-52, 150-53, 150-54, 150-55, 150-56, 150-57, 150-58, 150-59, 150-60, 150-61, 150-62, 150-63, 150-64, 150-65, 150-66, 150-67, 150-68, 150-69, 150-70, 150-71, 150-72, 150-73, 150-74, 150-75, 150-76, 150-77, 150-78, 150-79, 150-80, 150-81, 150-82, 150-83, 150-84, 150-85, 150-86, 150-87, 150-88, 150-89, 150-90, 150-91, 150-92, 150-93, 150-94, 150-95, 150-96, 150-97, 150-98, 150-99, 150-100, 150-101, 150-102, 150-103, 150-104, 150-105, 150-106, 150-107, 150-108, 150-109, 150-110, 150-111, 150-112, 150-113, 150-114, 150-115, 150-116, 150-117, 150-118, 150-119, 150-120, 150-121, 150-122, 150-123, 150-124, 150-125, 150-126, 150-127, 150-128, 150-129, 150-130, 150-131, 150-132, 150-133, 150-134, 150-135, 150-136, 150-137, 150-138, 150-139, 150-140, 150-141, 150-142, 150-143, 150-144, 150-145, 150-146, 150-147, 150-148, 150-149, 150-150, 150-151, 150-152, 150-153, 150-154, 150-155, 150-156, 150-157, 150-158, 150-159, 150-160, 150-161, 150-162, 150-163, 150-164, 150-165, 150-166, 150-167, 150-168, 150-169, 150-170, 150-171, 150-172, 150-173, 150-174, 150-175, 150-176, 150-177, 150-178, 150-179, 150-180, 150-181, 150-182, 150-183, 150-184, 150-185, 150-186, 150-187, 150-188, 150-189, 150-190, 150-191, 150-192, 150-193, 150-194, 150-195, 150-196, 150-197, 150-198, 150-199, 150-200, 150-201, 150-202, 150-203, 150-204, 150-205, 150-206, 150-207, 150-208, 150-209, 150-210, 150-211, 150-212, 150-213, 150-214, 150-215, 150-216, 150-217, 150-218, 150-219, 150-220, 150-221, 150-222, 150-223, 150-224, 150-225, 150-226, 150-227, 150-228, 150-229, 150-230, 150-231, 150-232, 150-233, 150-234, 150-235, 150-236, 150-237, 150-238, 150-239, 150-240, 150-241, 150-242, 150-243, 150-244, 150-245, 150-246, 150-247, 150-248, 150-249, 150-250, 150-251, 150-252, 150-253, 150-254, 150-255, 150-256, 150-257, 150-258, 150-259, 150-260, 150-261, 150-262, 150-263, 150-264, 150-265, 150-266, 150-267, 150-268, 150-269, 150-270, 150-271, 150-272, 150-273, 150-274, 150-275, 150-276, 150-277, 150-278, 150-279, 150-280, 150-281, 150-282, 150-283, 150-284, 150-285, 150-286, 150-287, 150-288, 150-289, 150-290, 150-291, 150-292, 150-293, 150-294, 150-295, 150-296, 150-297, 150-298, 150-299, 150-300, 150-301, 150-302, 150-303, 150-304, 150-305, 150-306, 150-307, 150-308, 150-309, 150-310, 150-311, 150-312, 150-313, 150-314, 150-315, 150-316, 150-317, 150-318, 150-319, 150-320, 150-321, 150-322, 150-323, 150-324, 150-325, 150-326, 150-327, 150-328, 150-329, 150-330, 150-331, 150-332, 150-333, 150-334, 150-335, 150-336, 150-337, 150-338, 150-339, 150-340, 150-341, 150-342, 150-343, 150-344, 150-345, 150-346, 150-347, 150-348, 150-349, 150-350, 150-351, 150-352, 150-353, 150-354, 150-355, 150-356, 150-357, 150-358, 150-359, 150-360, 150-361, 150-362, 150-363, 150-364, 150-365, 150-366, 150-367, 150-368, 150-369, 150-370, 150-371, 150-372, 150-373, 150-374, 150-375, 150-376, 150-377, 150-378, 150-379, 150-380, 150-381, 150-382, 150-383, 150-384, 150-385, 150-386, 150-387, 150-388, 150-389, 150-390, 150-391, 150-392, 150-393, 150-394, 150-395, 150-396, 150-397, 150-398, 150-399, 150-400, 150-401, 150-402, 150-403, 150-404, 150-405, 150-406, 150-407, 150-408, 150-409, 150-410, 150-411, 150-412, 150-413, 150-414, 150-415, 150-416, 150-417, 150-418, 150-419, 150-420, 150-421, 150-422, 150-423, 150-424, 150-425, 150-426, 150-427, 150-428, 150-429, 150-430, 150-431, 150-432, 150-433, 150-434, 150-435, 150-436, 150-437, 150-438, 150-439, 150-440, 150-441, 150-442, 150-443, 150-444, 150-445, 150-446, 150-447, 150-448, 150-449, 150-450, 150-451, 150-452, 150-453, 150-454, 150-455, 150-456, 150-457, 150-458, 150-459, 150-460, 150-461, 150-462, 150-463, 150-464, 150-465, 150-466, 150-467, 150-46





Prod. Reference = 8624-31-#5310

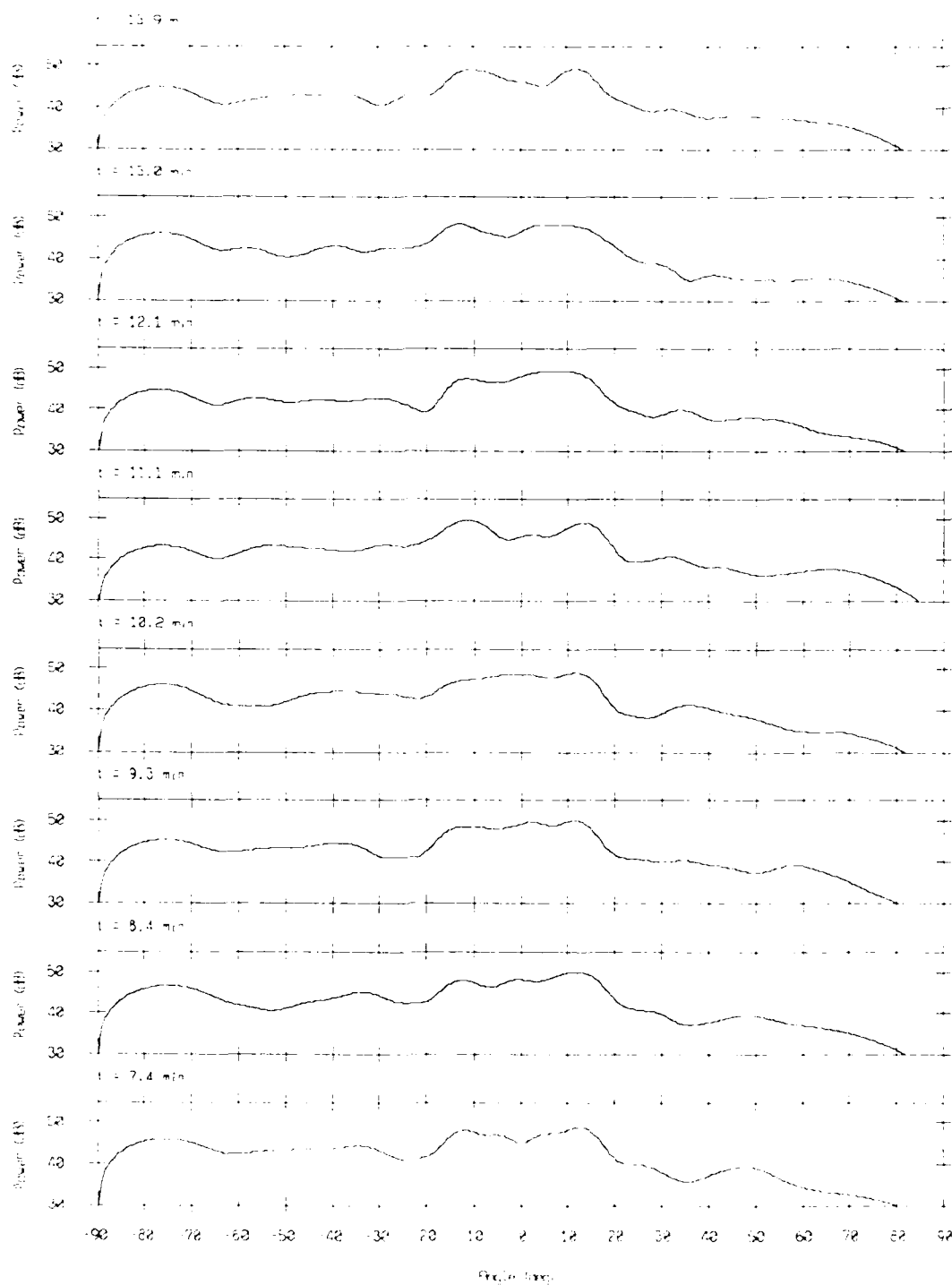
$f = 1/5$  Hz, K3 window (alpha = 1.5)





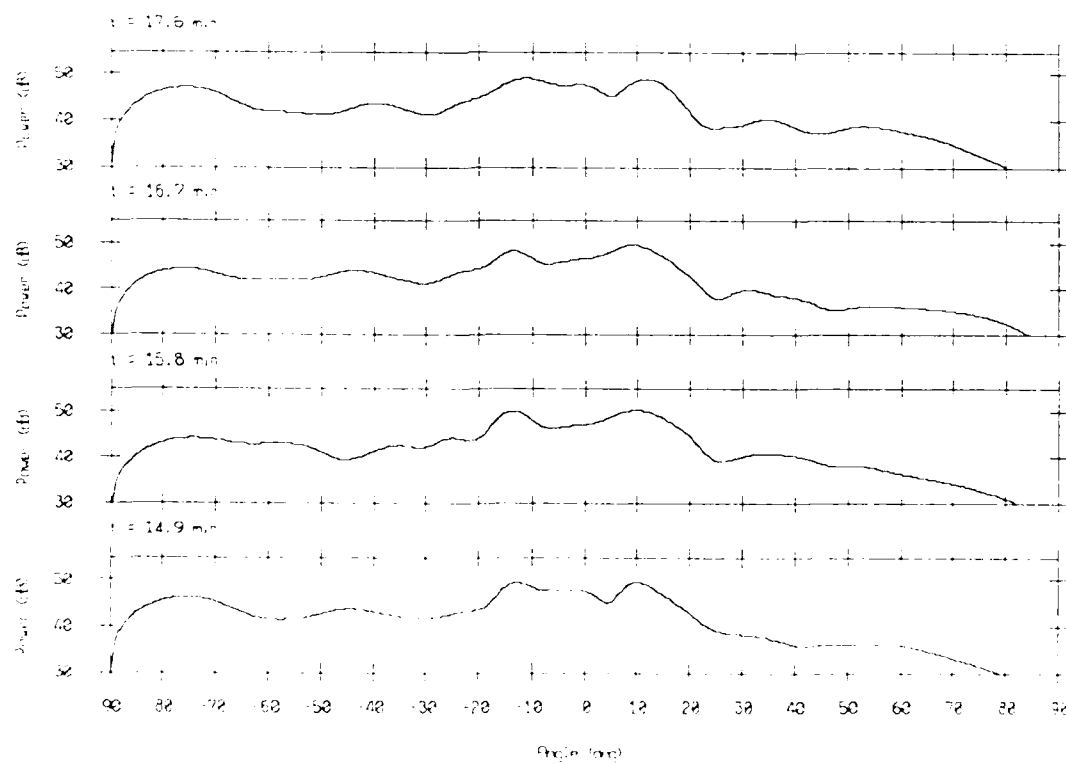
Ordnance Research - 88047-914 #4516

7.5 Hz, KS window (slope = 1.5)



Control System - 80247-017 #0011

F = 1.5 Hz, AS Window Length = 1.5



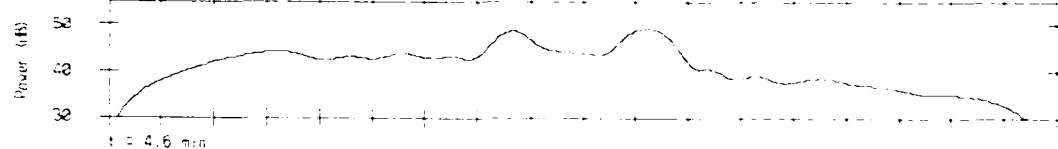
Power Spectra of the "Signal"

$f = 200 \pm 2$  Hz with a duration of 1 sec

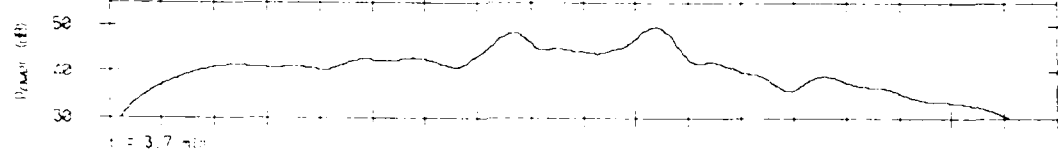
$t = 0$  min



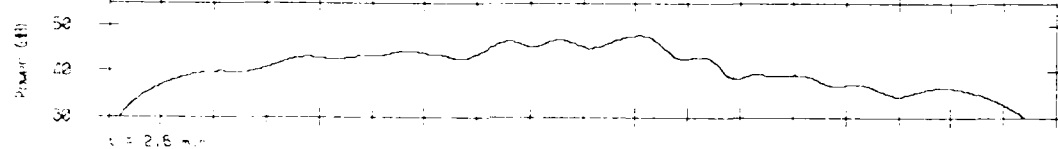
$t = 5.6$  min



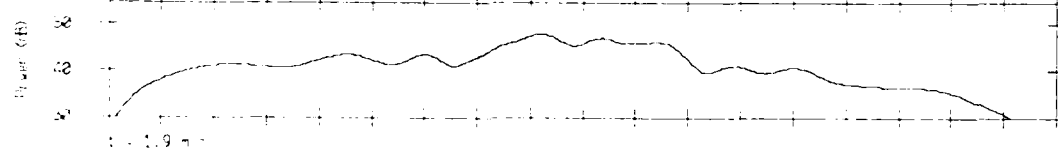
$t = 4.6$  min



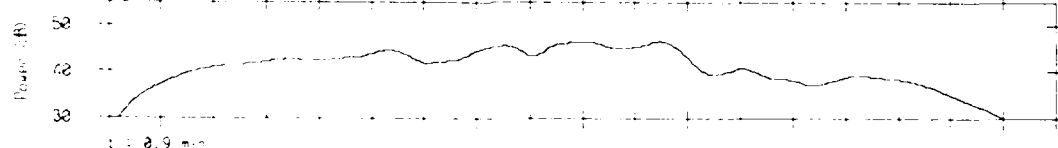
$t = 3.7$  min



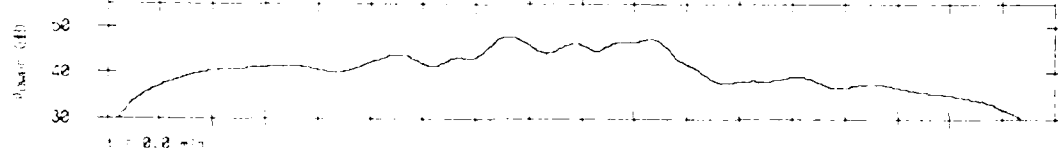
$t = 2.6$  min



$t = 1.9$  min



$t = 0.9$  min



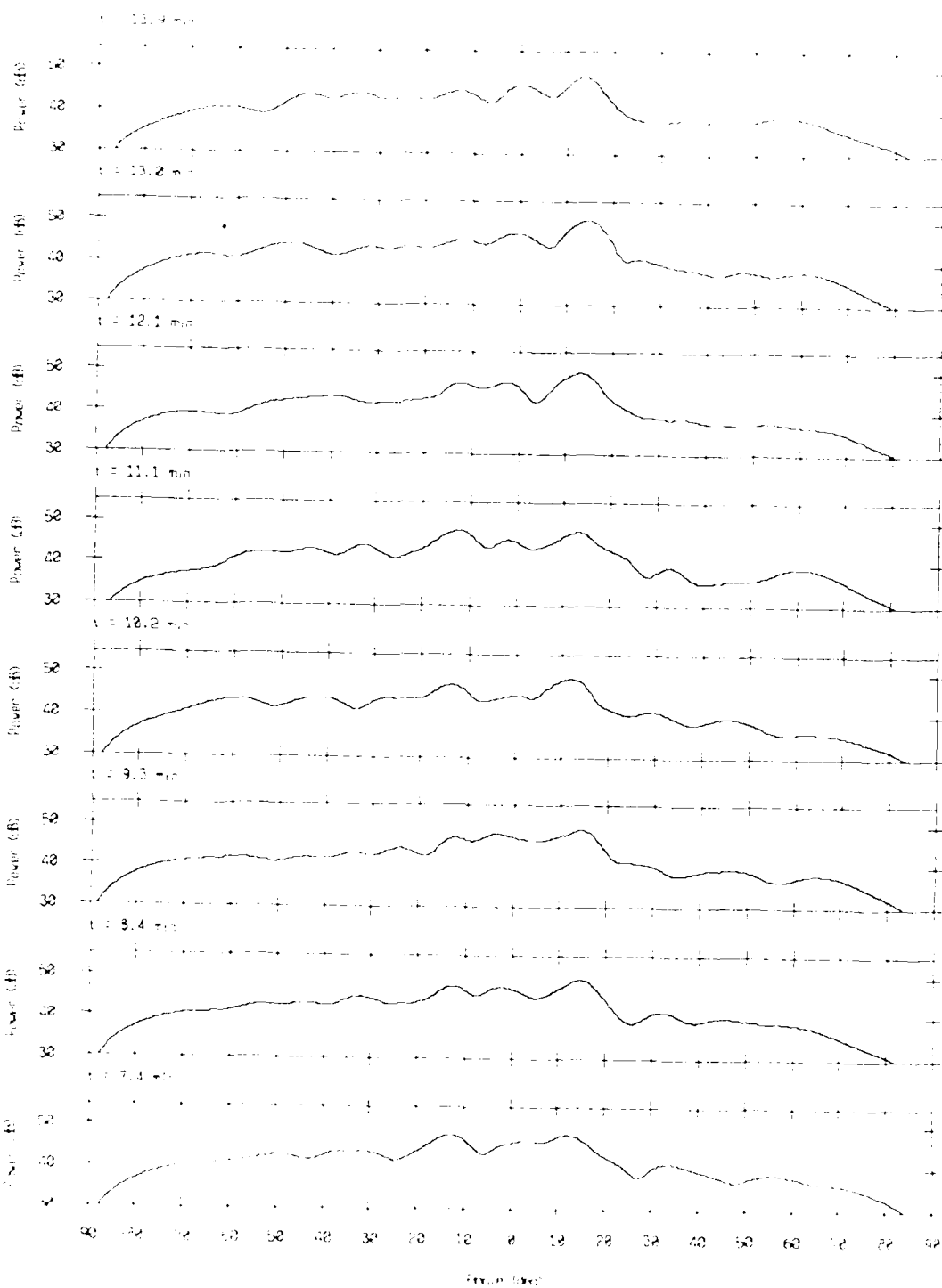
$t = 0.2$  min



$t = 0$  min

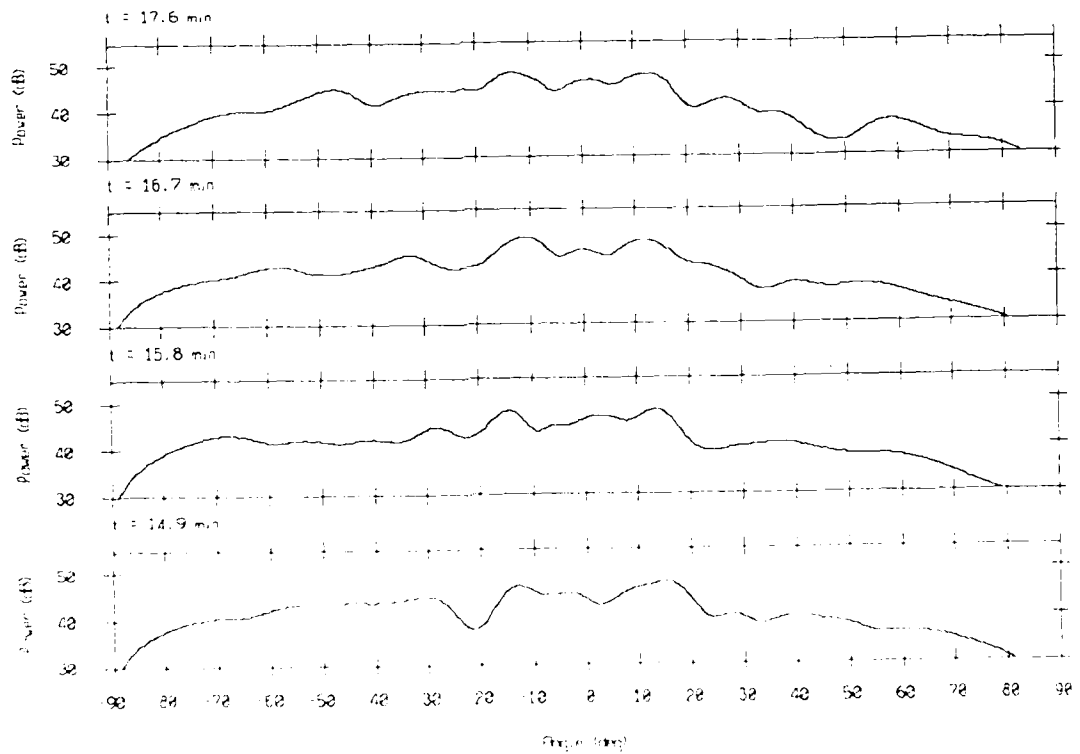
Frequency

Power Response 80240 210 70.000  
 f = 200 Hz, <S Arrow Time = 1.0



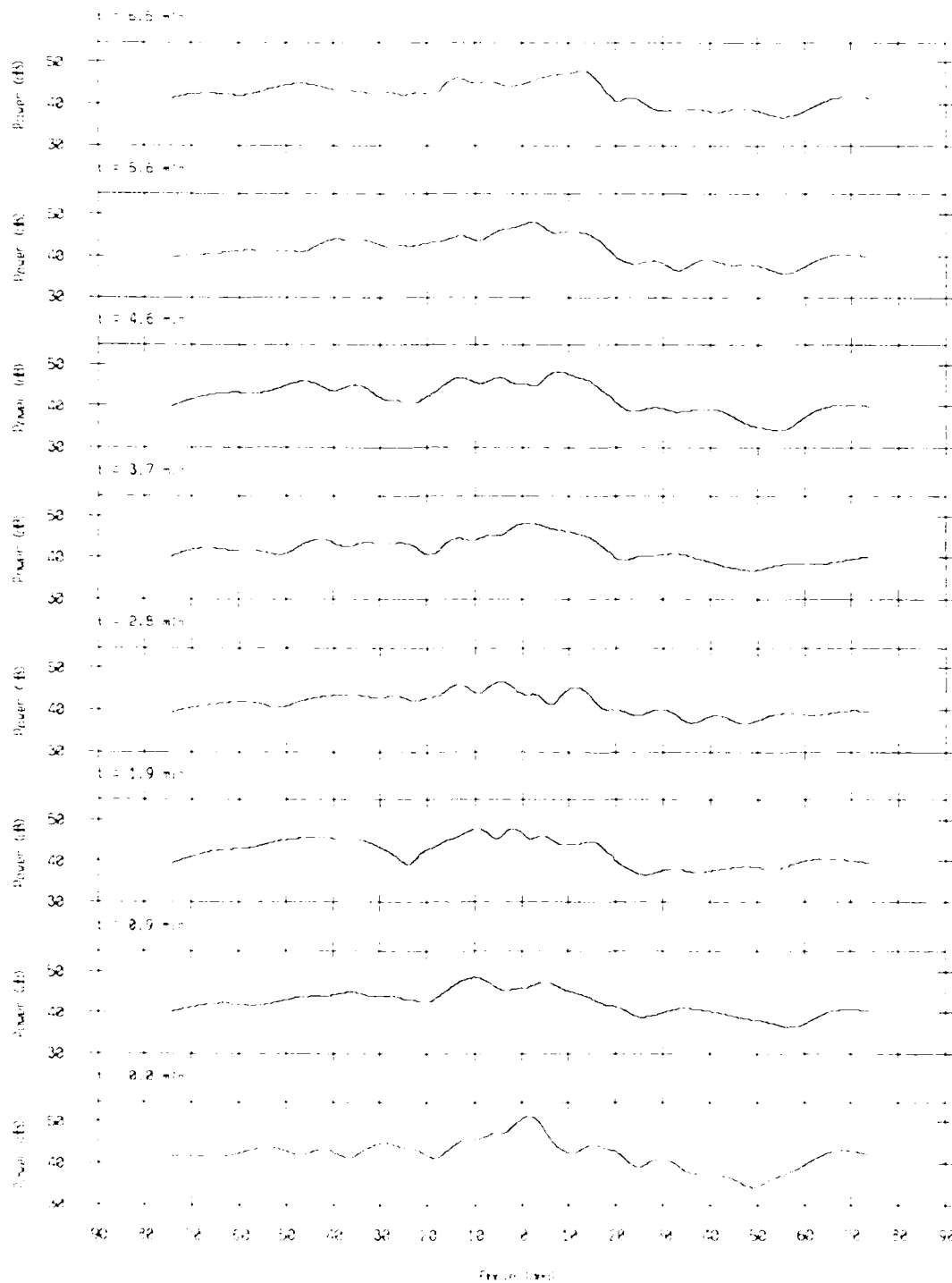
Runway - 86247 31r #5490

$f = 222$  Hz, K3 window (alpha = 1.5)

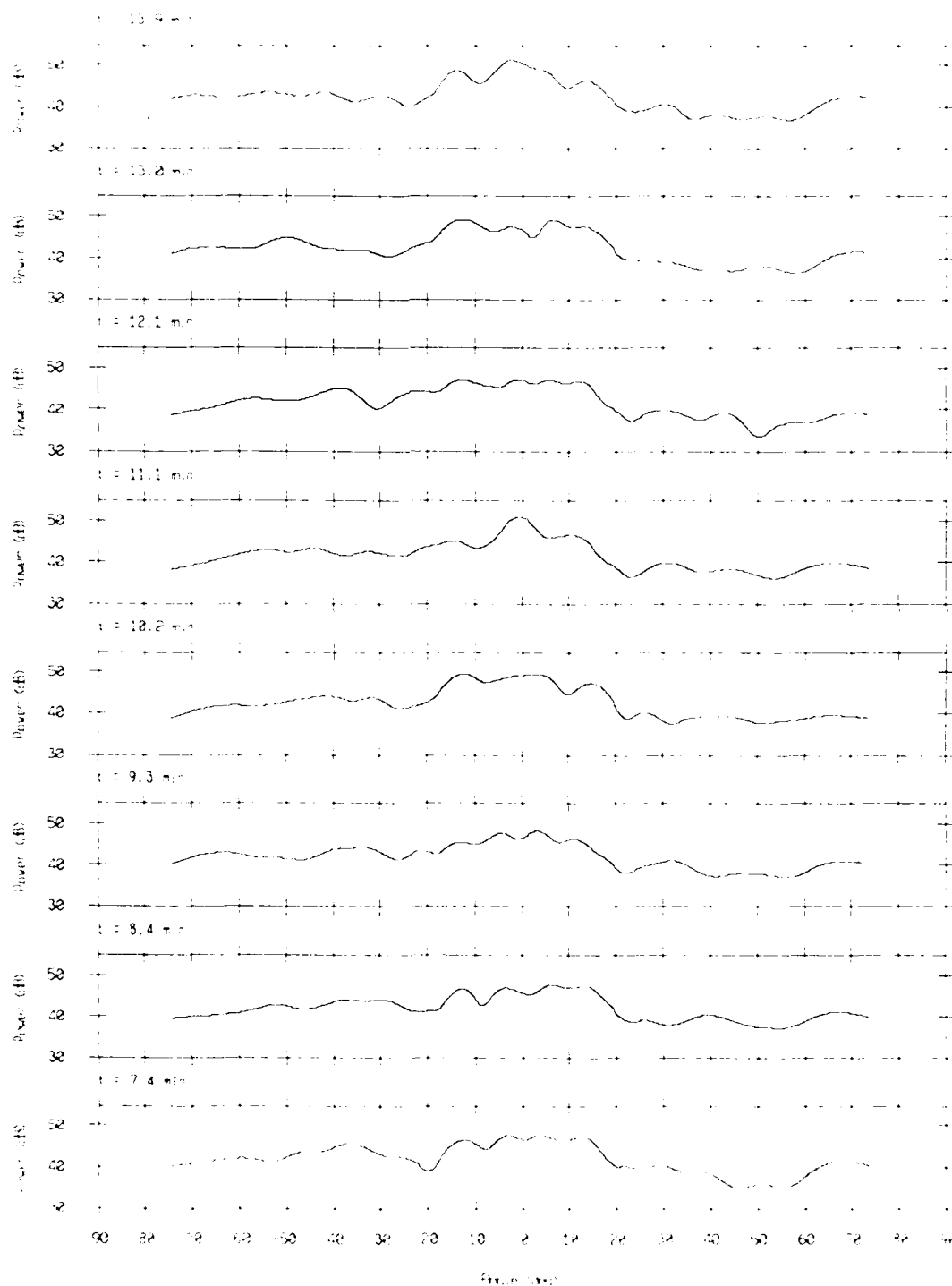


Power Response 80047 31- #0004

$f = 225 \text{ Hz}$ ,  $K5$  window (alpha = 1.5)

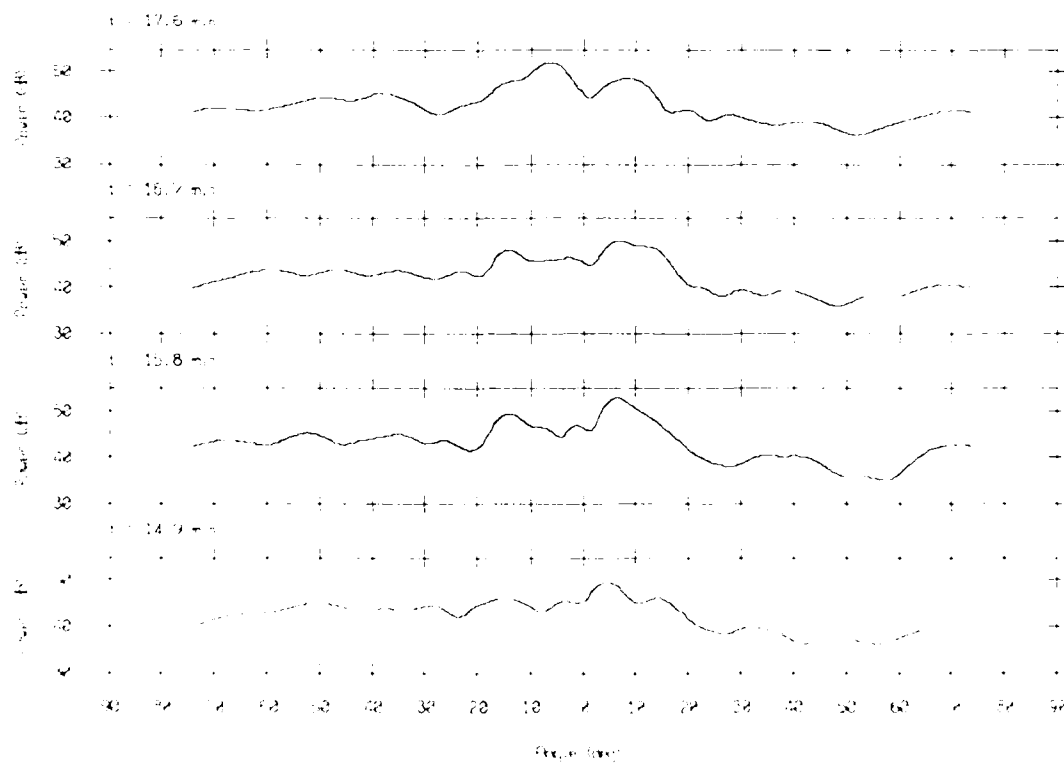


Frequency response of the system  
 200 Hz, no wind, curve - 1.0



Drilling Response - 86247 B1- #5664

$f = 220$  Hz, <S window (alone - 1.5)





Array Response - 85247 31- #5932

$f = 250$  Hz,  $\Delta \theta$  window (column) =  $1^\circ$

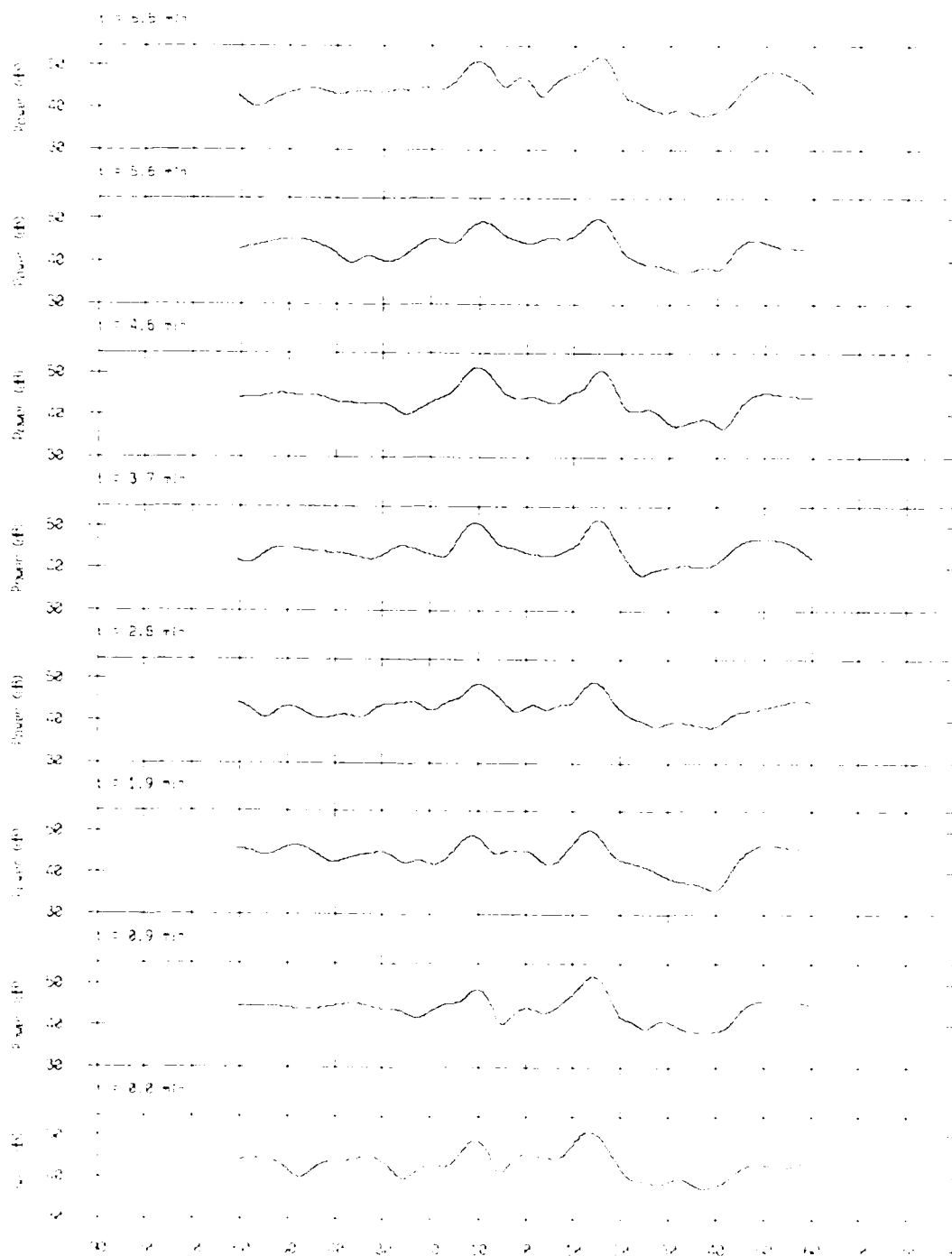
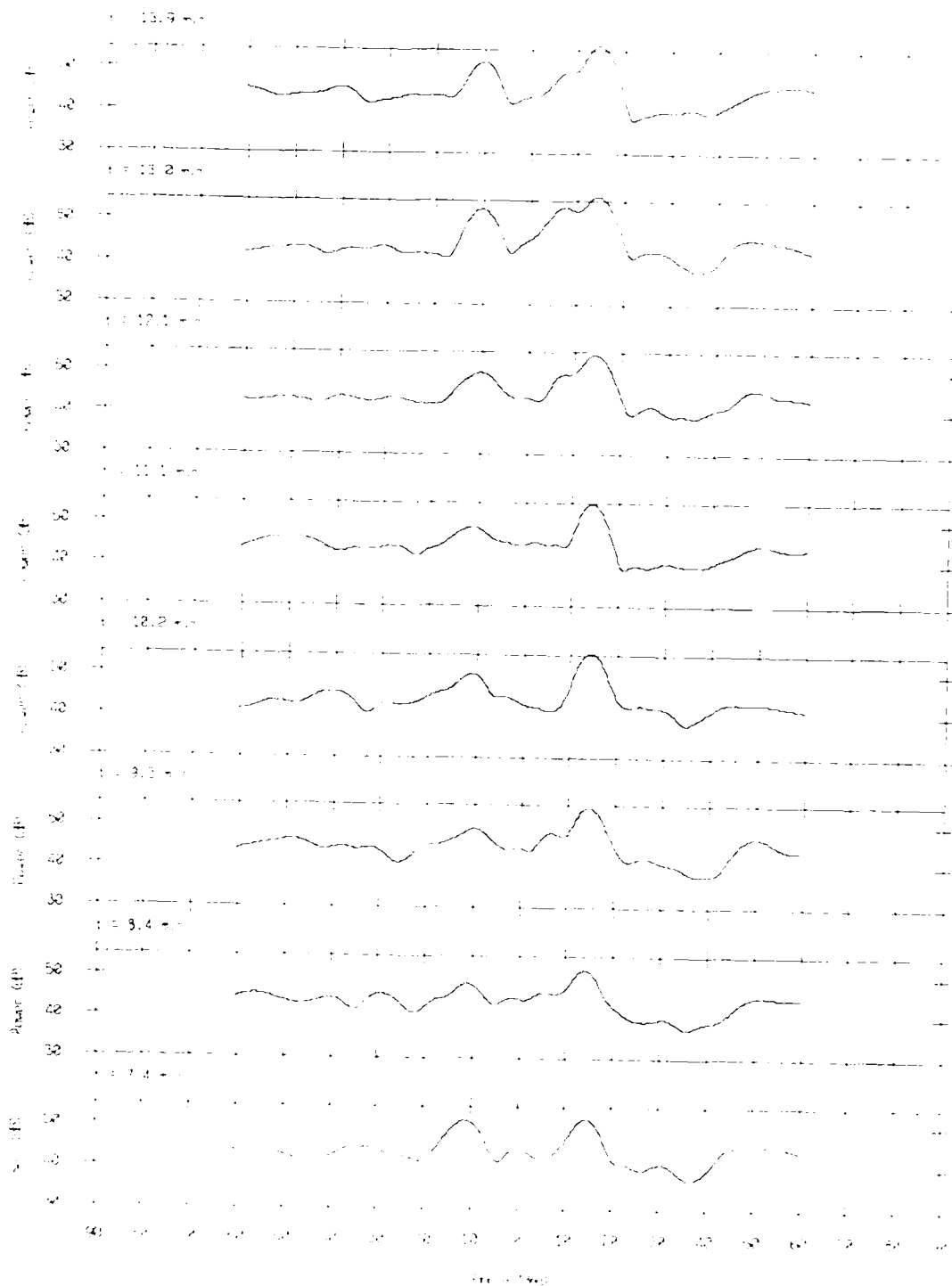


Figure 30

Energy Resonance = 882 Hz (100 Hz)

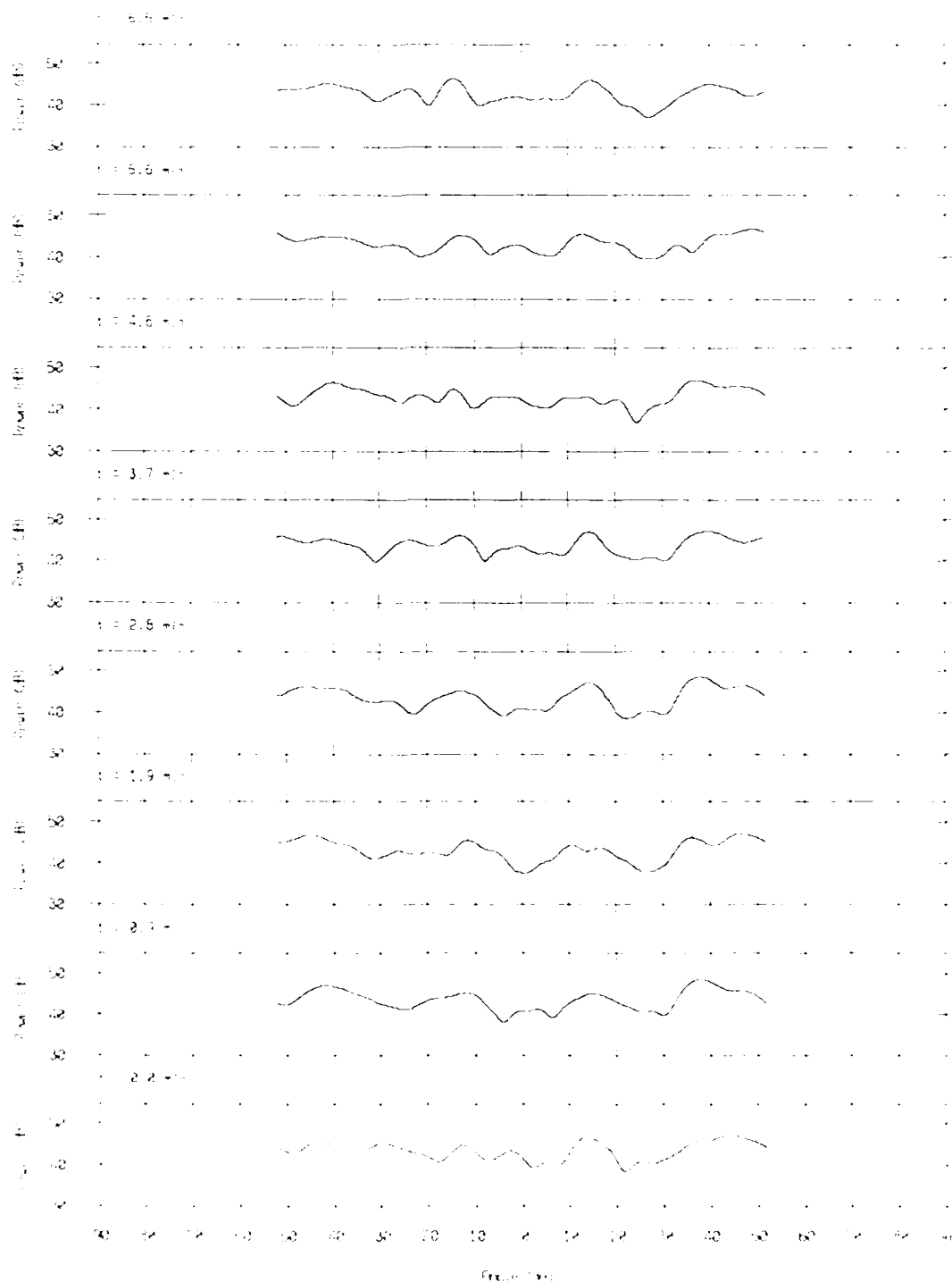
$f = 200$  Hz, 45 window (data = 1.5)



$$| \langle \psi | \hat{H} | \psi \rangle - E_0 | \leq \frac{\epsilon}{2},$$

Orion, Perseus 88247 31- #0012

$f = 2.5 \text{ Hz}$ , 80 Window (Area = 1.5)



Wavelength 1000 m, #5717

Wavelength, no. 1000 m, 1.5.

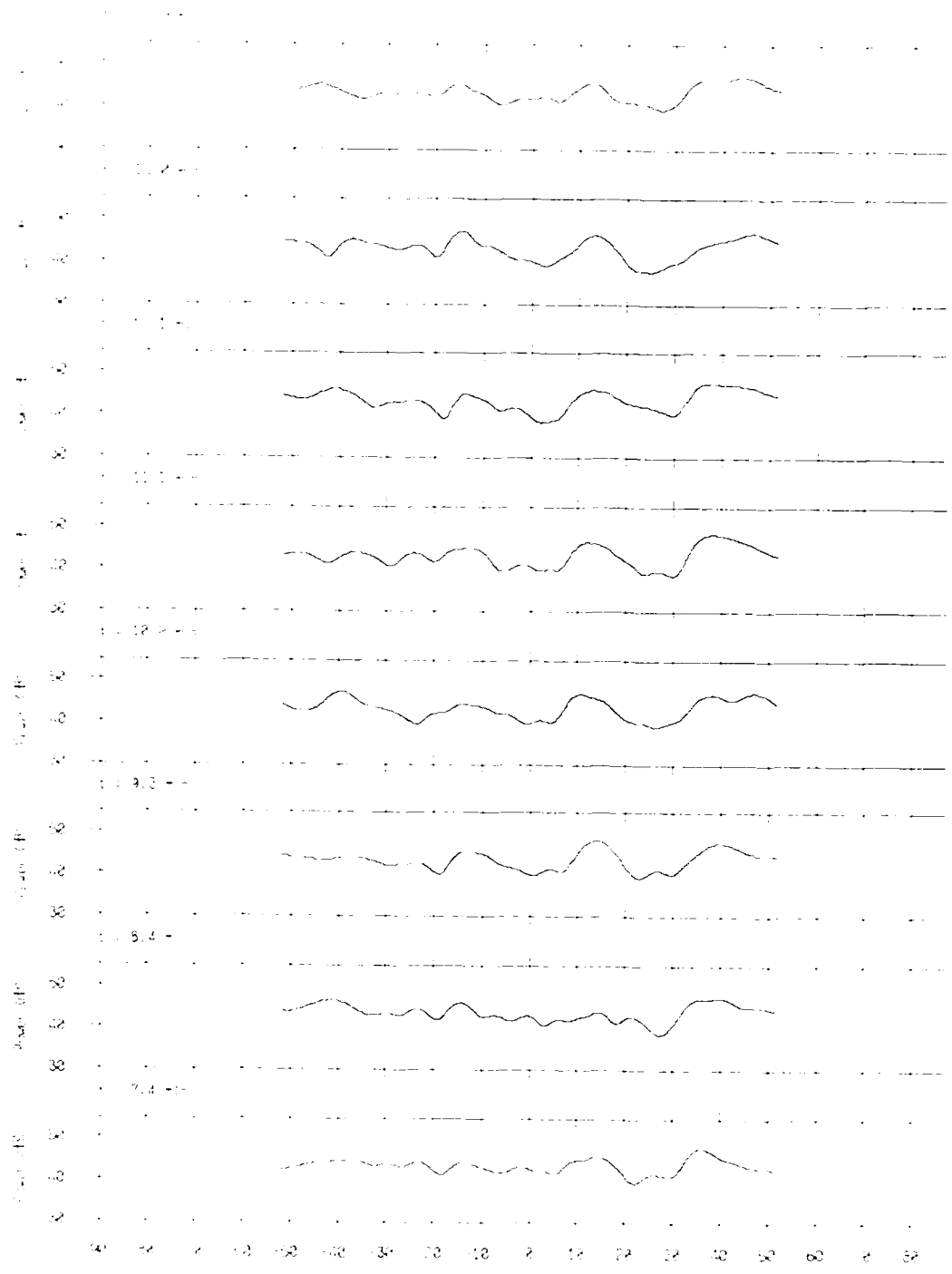
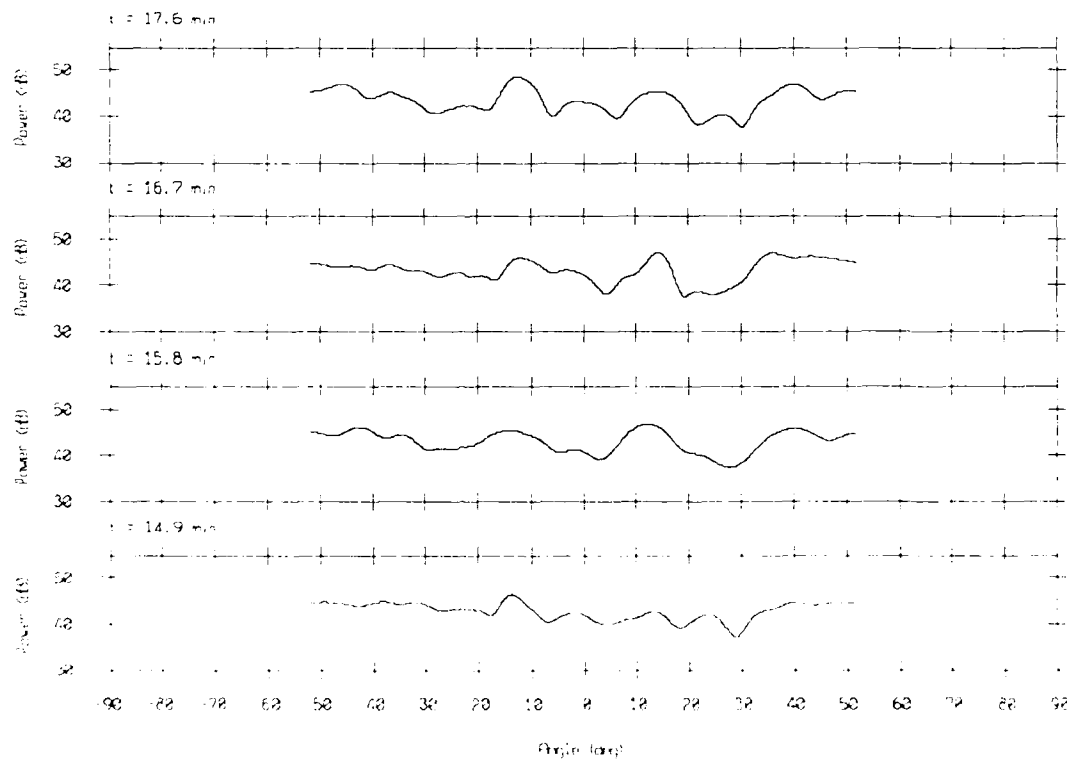


Figure 10

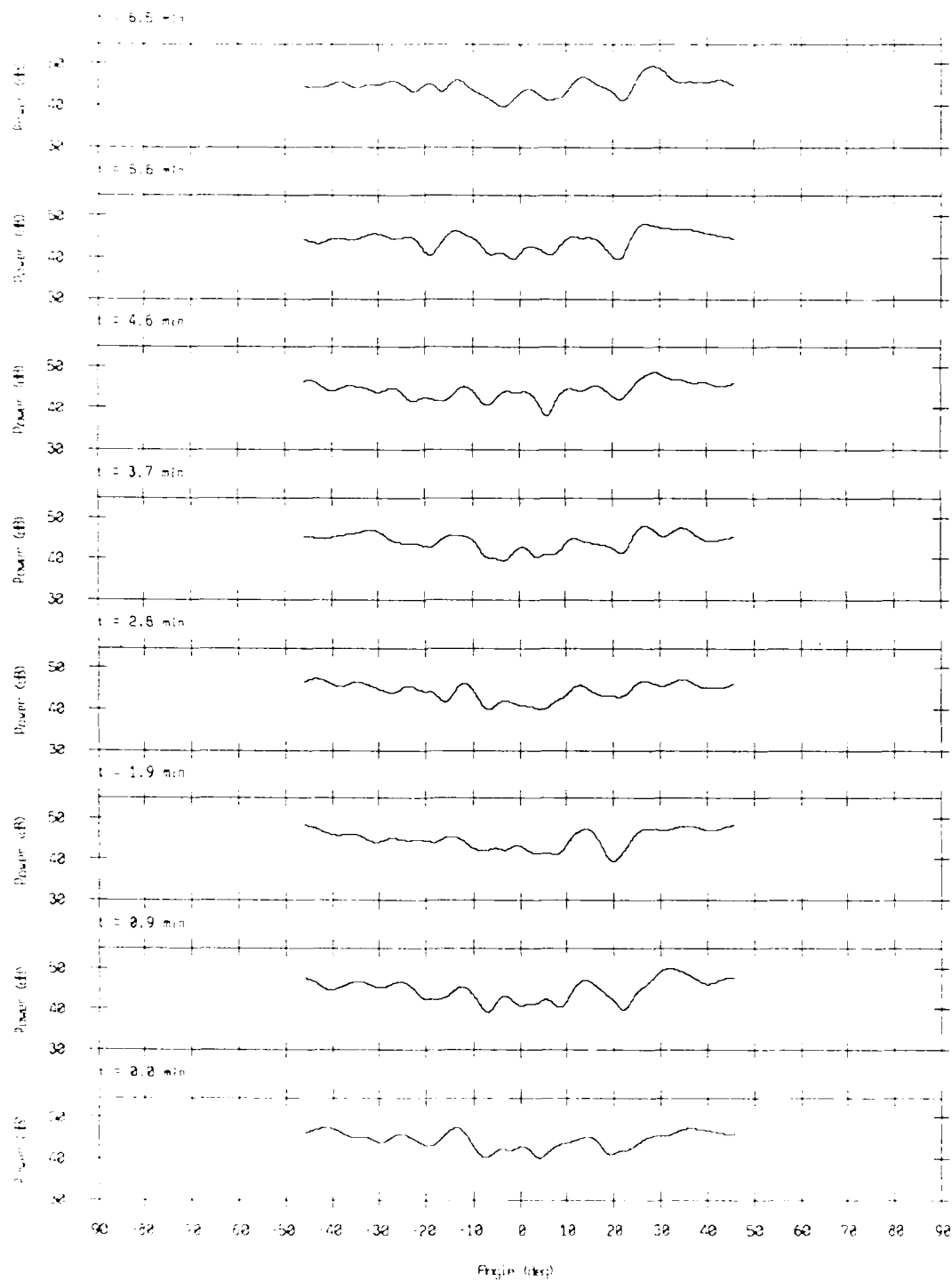
Power Response - 86247 Bin #6012

$f = 275$  Hz, KB window ( $\alpha = 1.5$ )



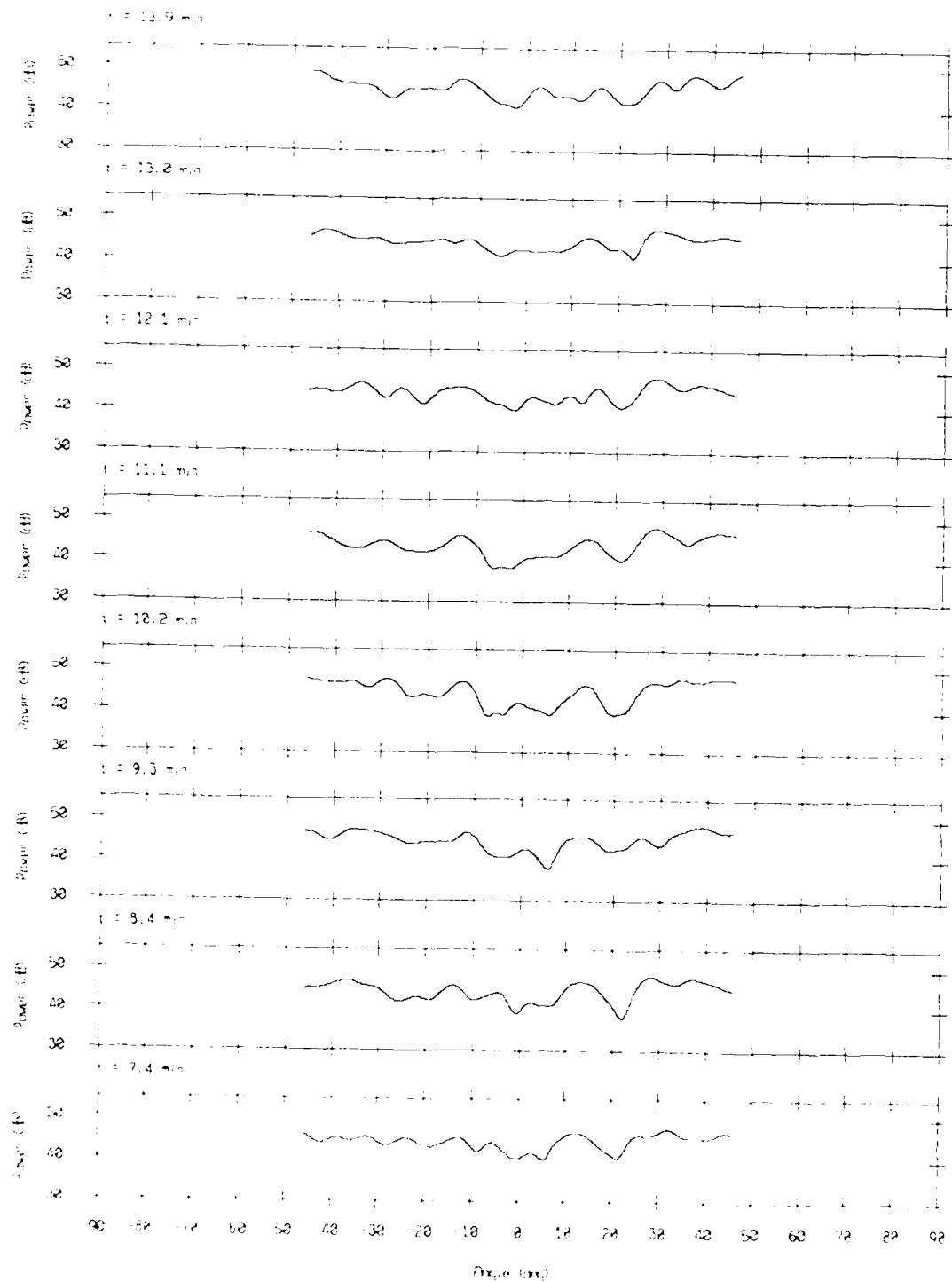
Acoustic Response - 86247 Bin #6186

$f = 322$  Hz,  $\Delta f$  Window (octave) = 1.5



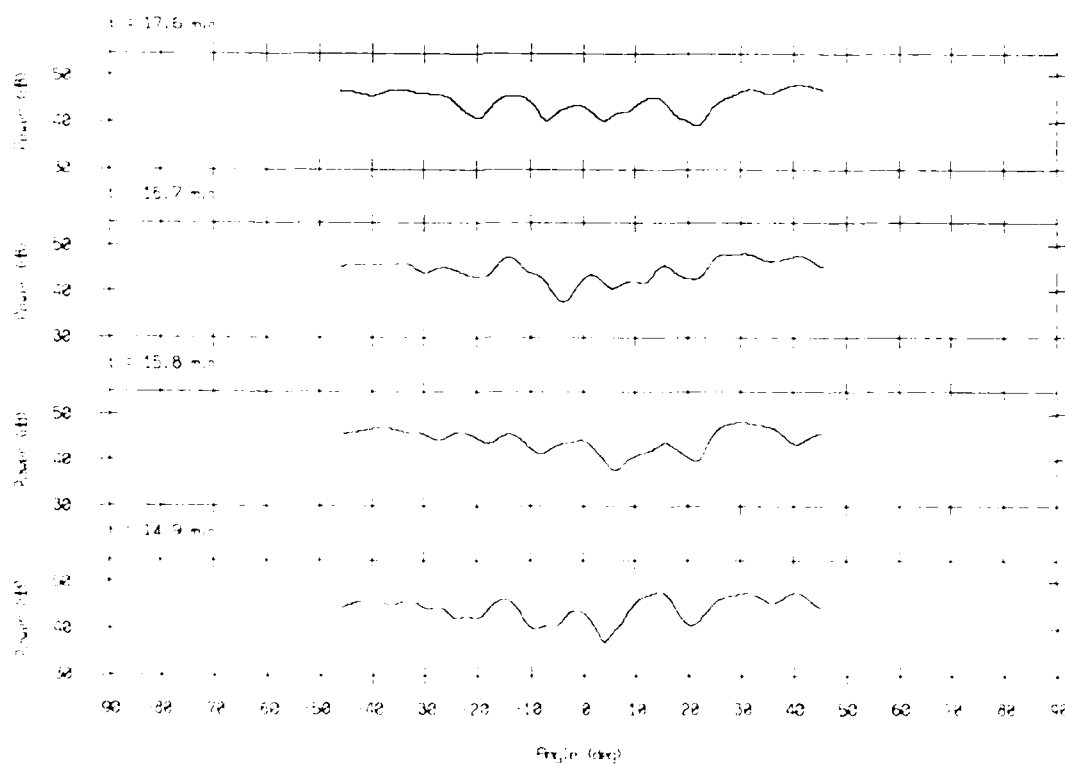
Probe Response - 86247 31- #6186

$f = 322$  Hz,  $\Delta B$  window (alpha = 1.5)





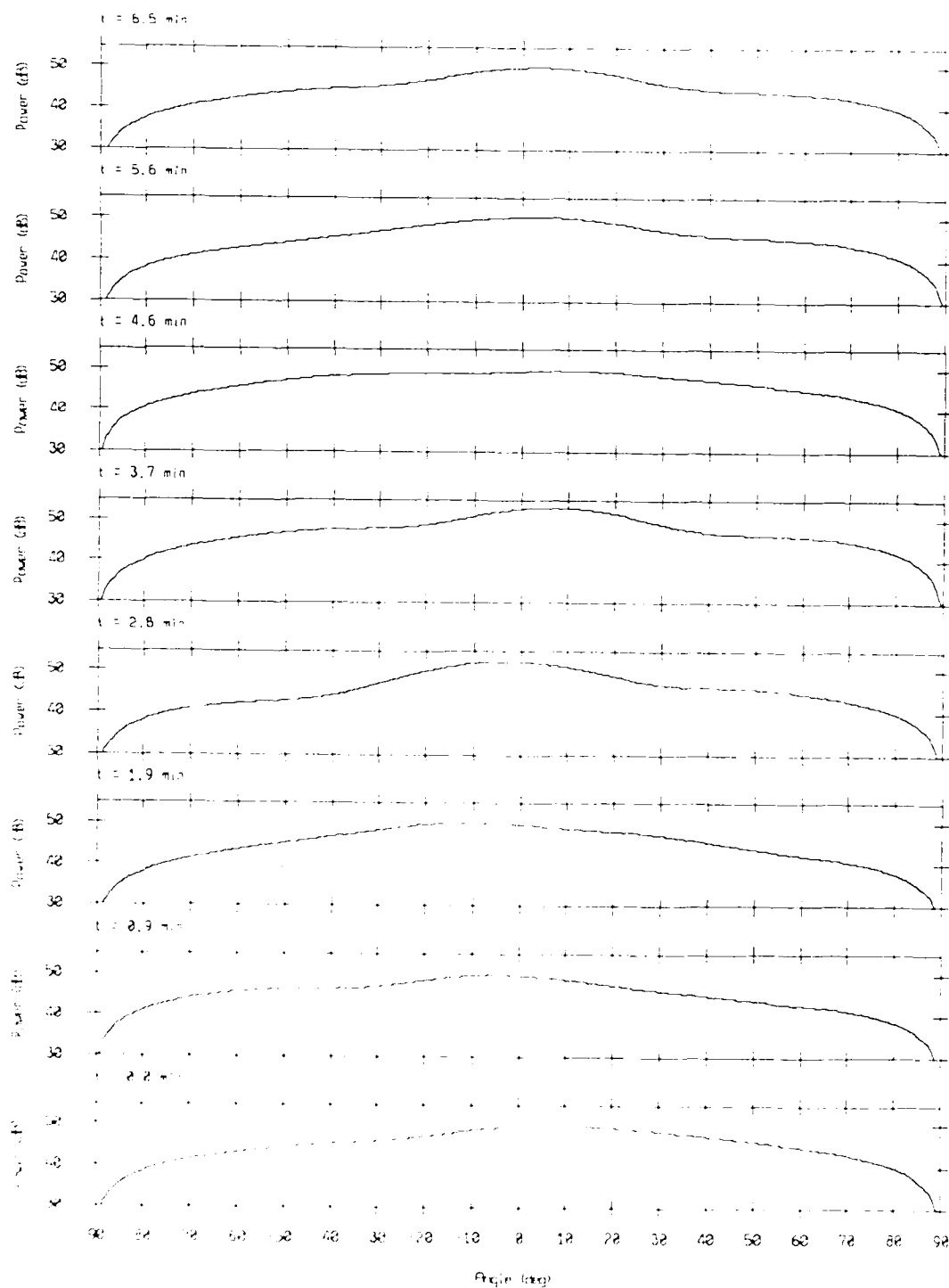
Array Response - 86247 BIn #6186  
 $f = 322$  Hz, K3 window (alpha = 1.5)



## VII. Array Response: Panels, Rect Window.

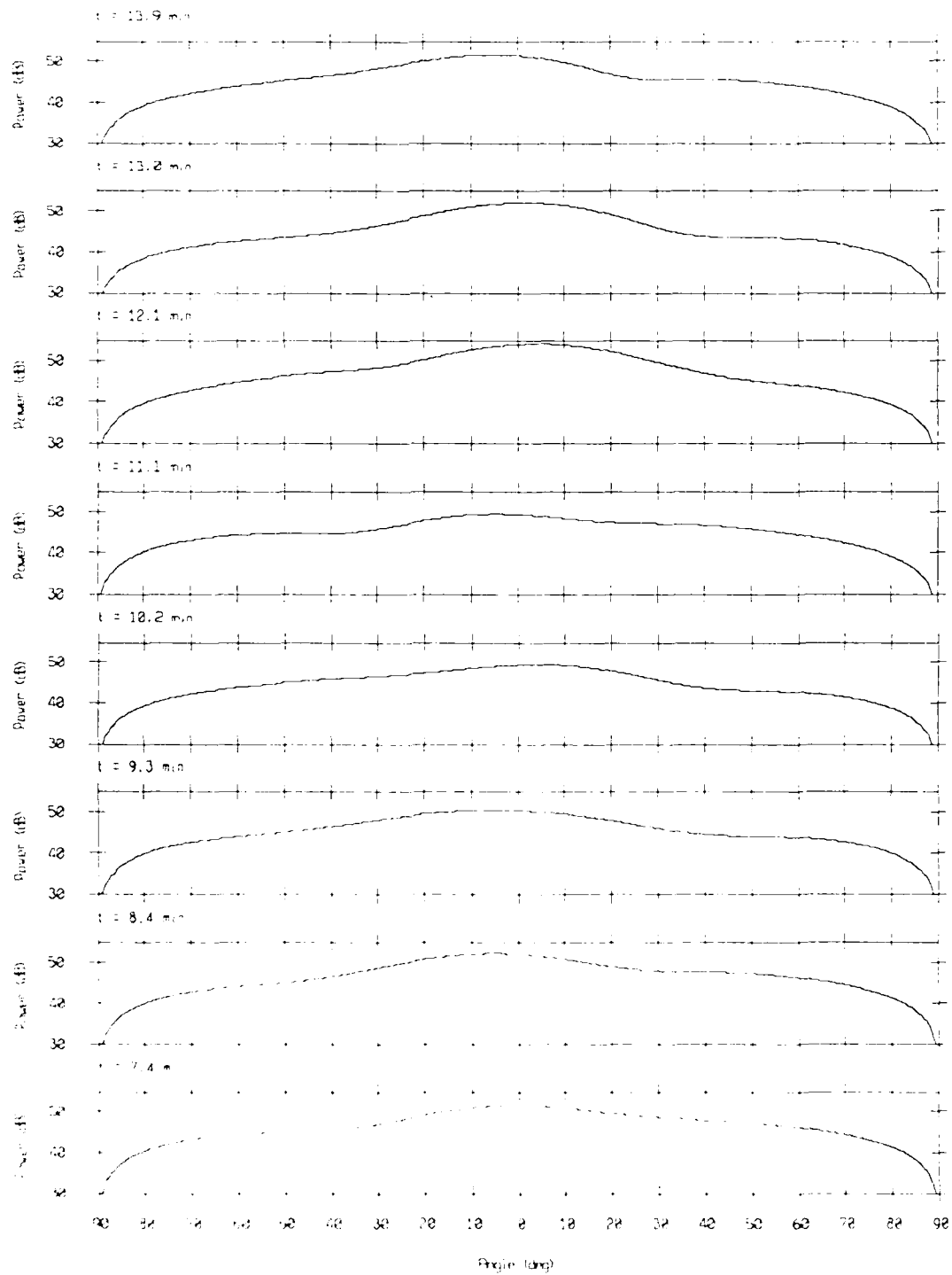
Array Response - 86247 B1- #4271

$f = 25$  Hz, next window



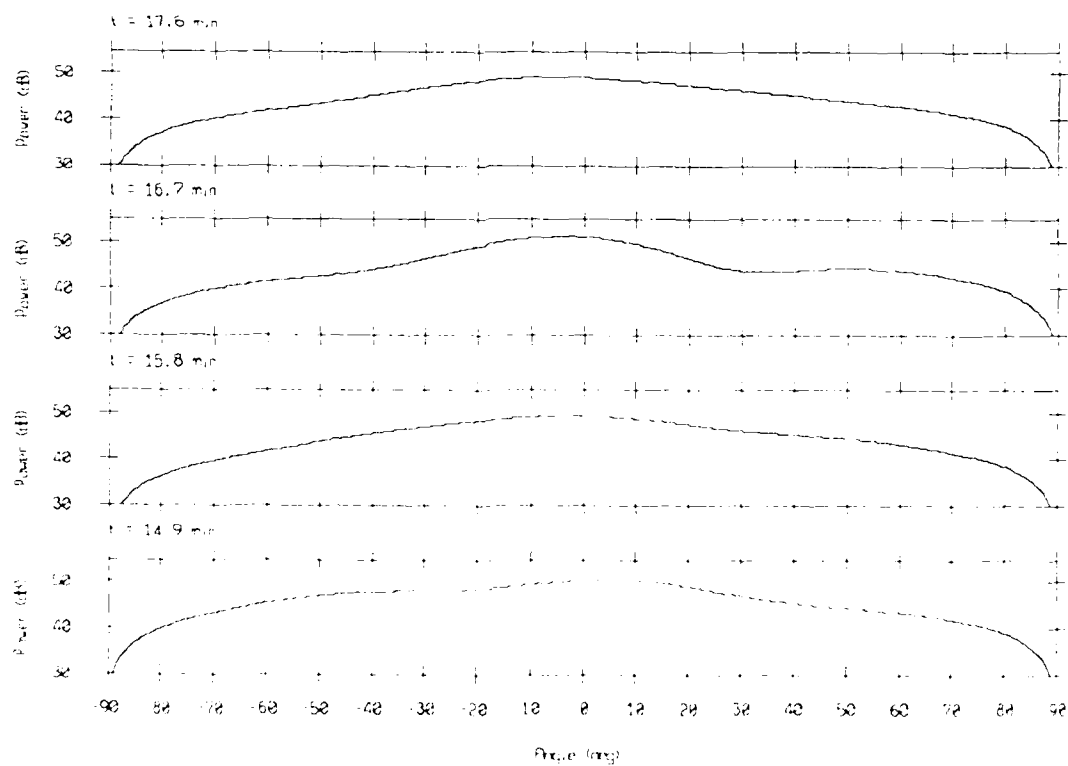
Energy Response - 86247 Bin #4271

$f = 25$  Hz, rect window



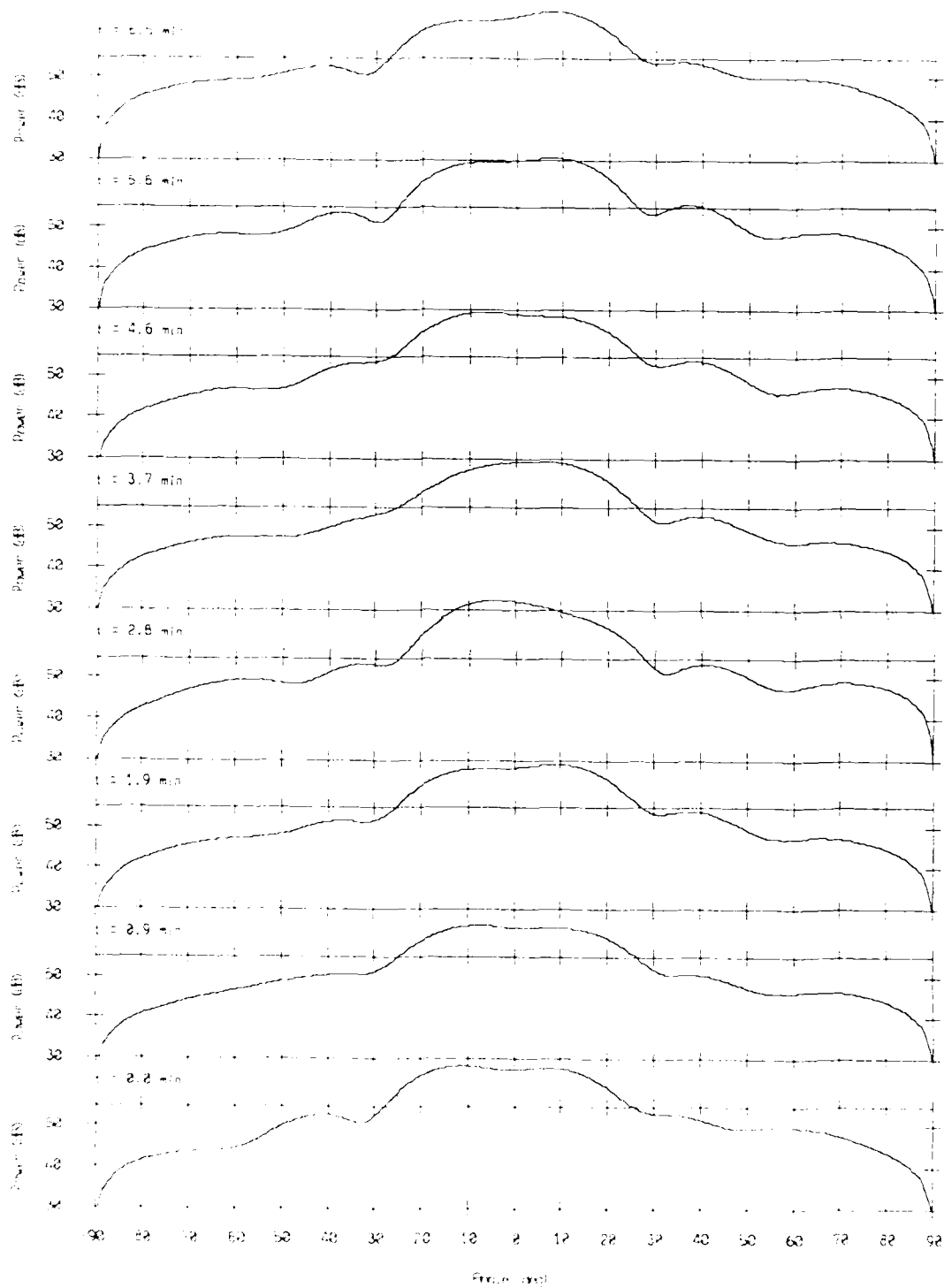
Brady Response - 86247 Bin #4271

$f = 25$  Hz, rect window



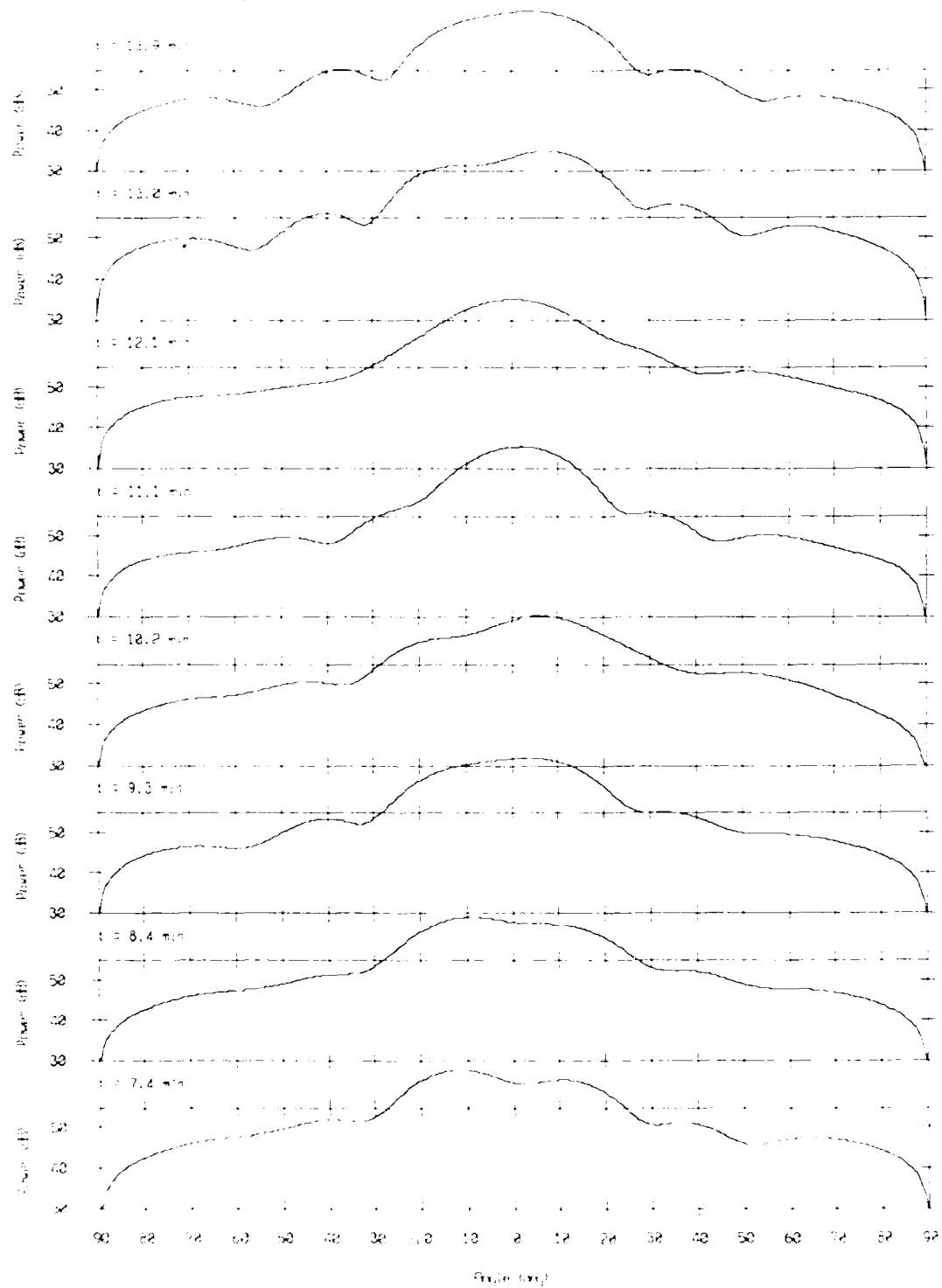
Acoustic Response - 86247 31- #41.15

1 - 50 Hz, next window



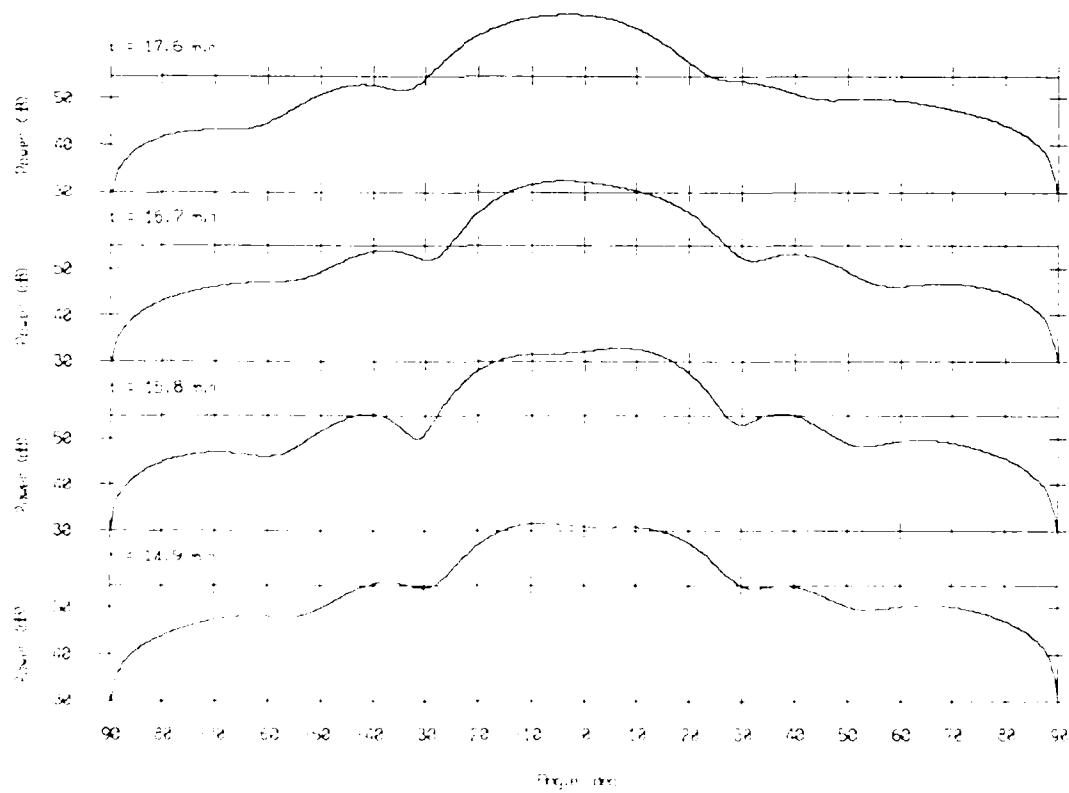
Array Distance: 885.131 m

50 Hz, next window



Conv. Residue 86247 Bin #4445

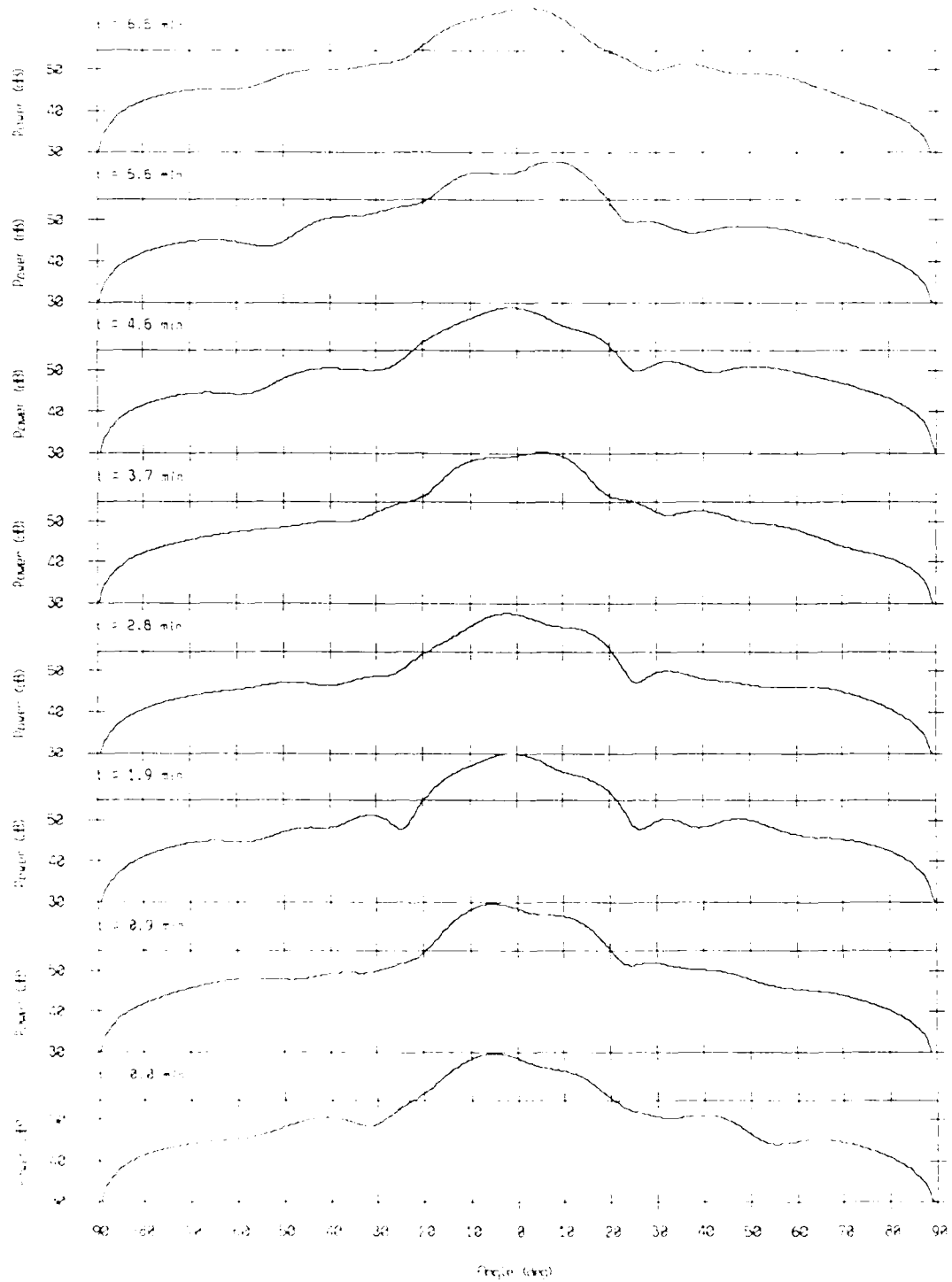
f = 60 Hz, rect window





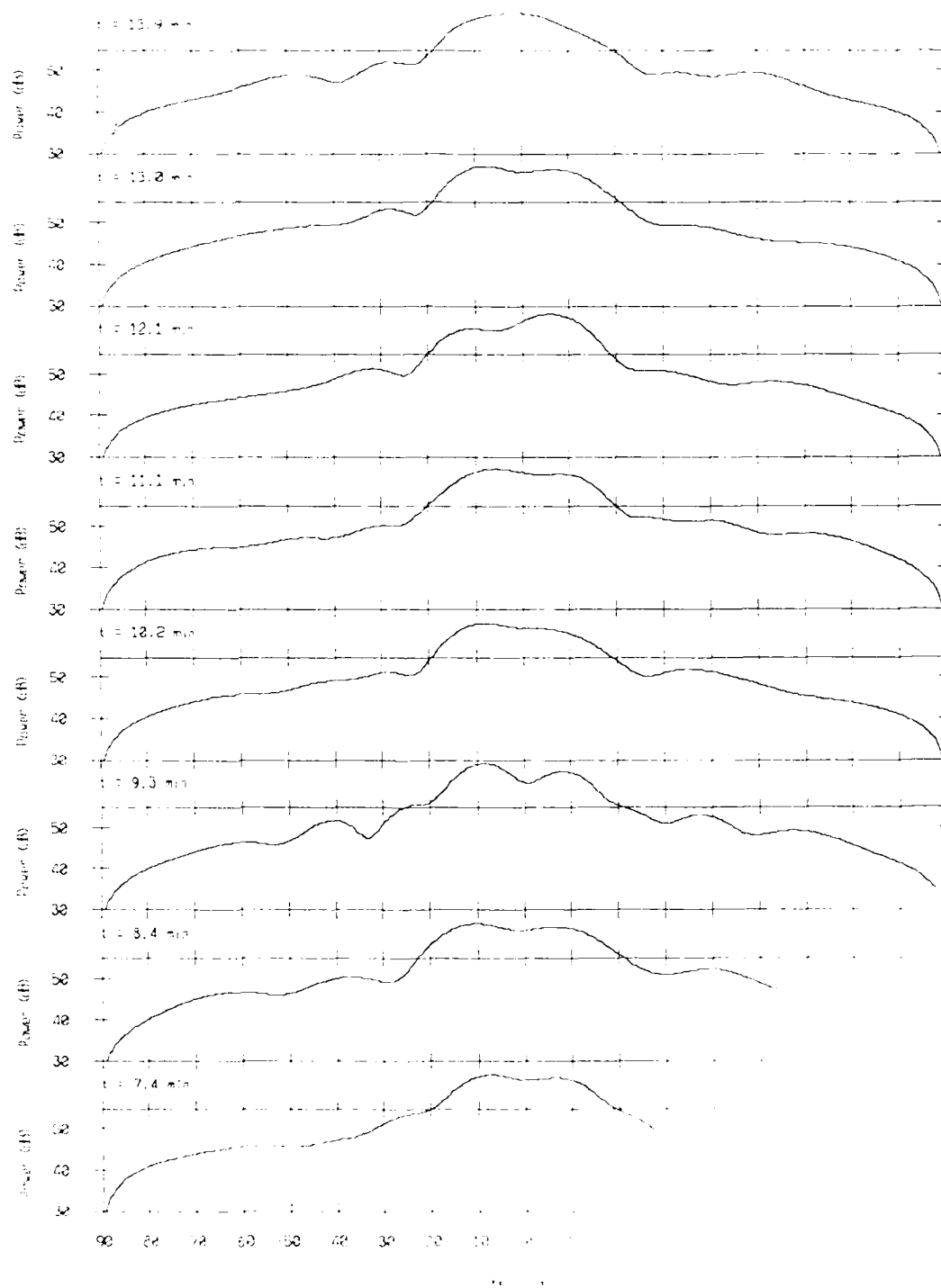
Power Spectra of the signal

$f = 15 - 21$  kHz window



Run, Response - 86247 Str #4619

10 Hz, root window



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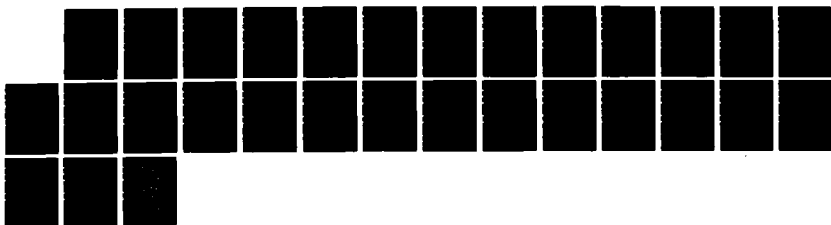
VERTICAL DIRECTIONALITY OF AMBIENT NOISE AT 32 DEG N AS 272  
A FUNCTION OF LON (U) SCRIPPS INSTITUTION OF  
OCEANOGRAPHY LA JOLLA CA MARINE PHYSIC

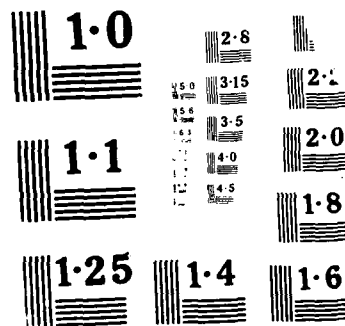
UNCLASSIFIED

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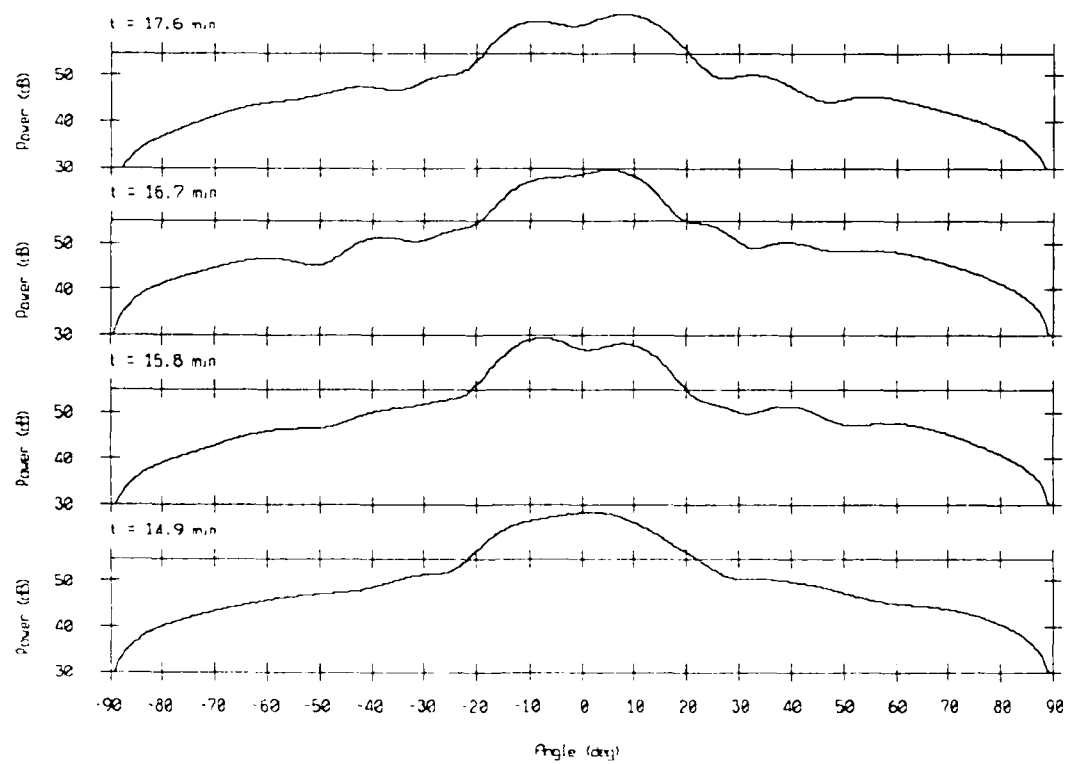
NL





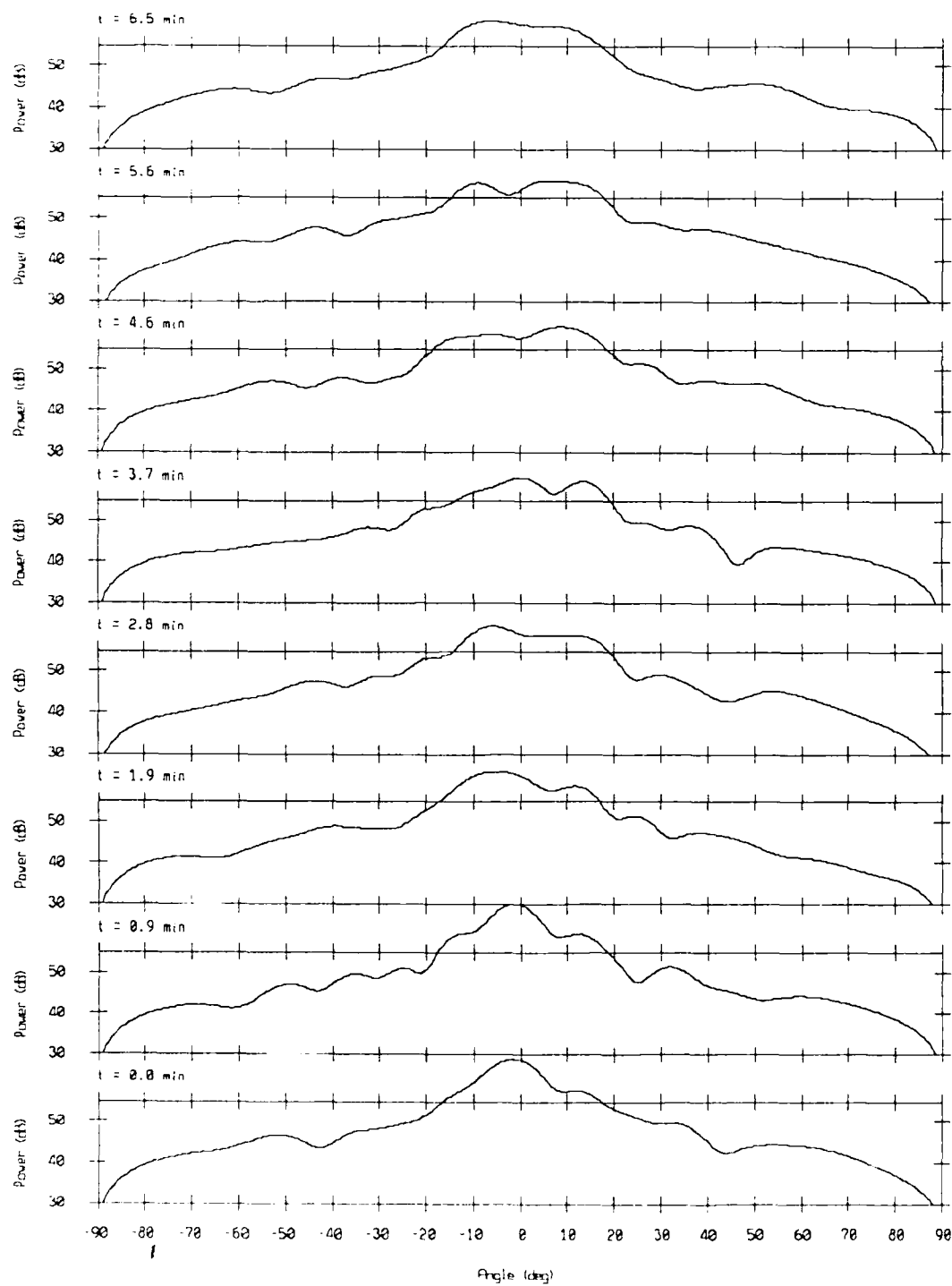
Array Response - 86247 Bin #4619

$f = 75$  Hz, rect window



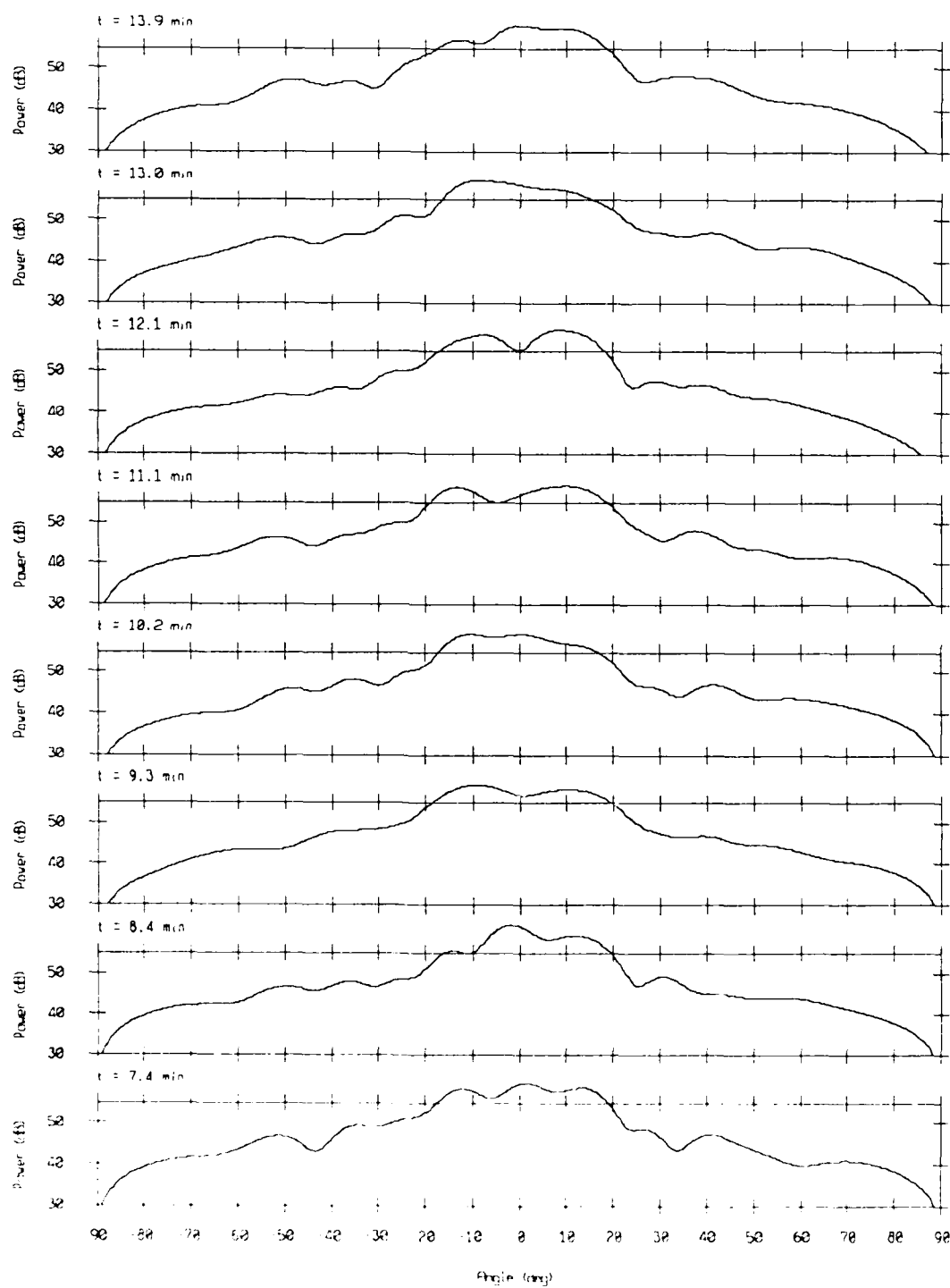
# Array Response - 86247 Bin #4793

$f = 100$  Hz, rect window



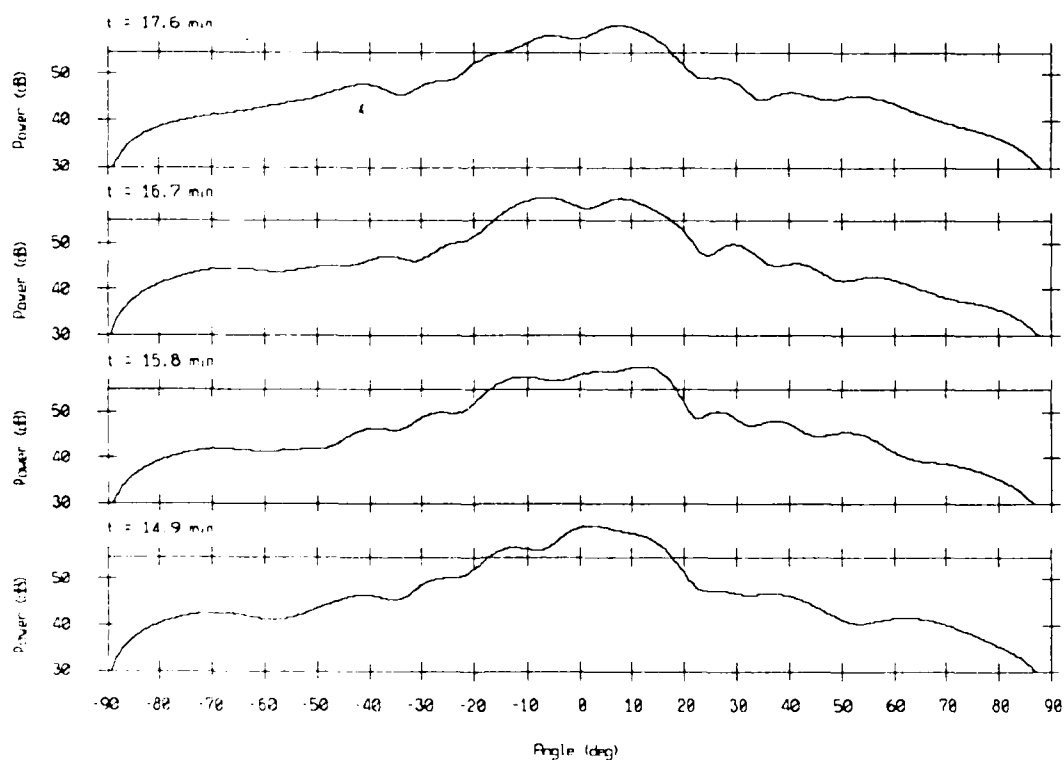
Array Response - 86247 Bin #4793

$f = 100$  Hz, rect window



Array Response - 86247 Bin #4793

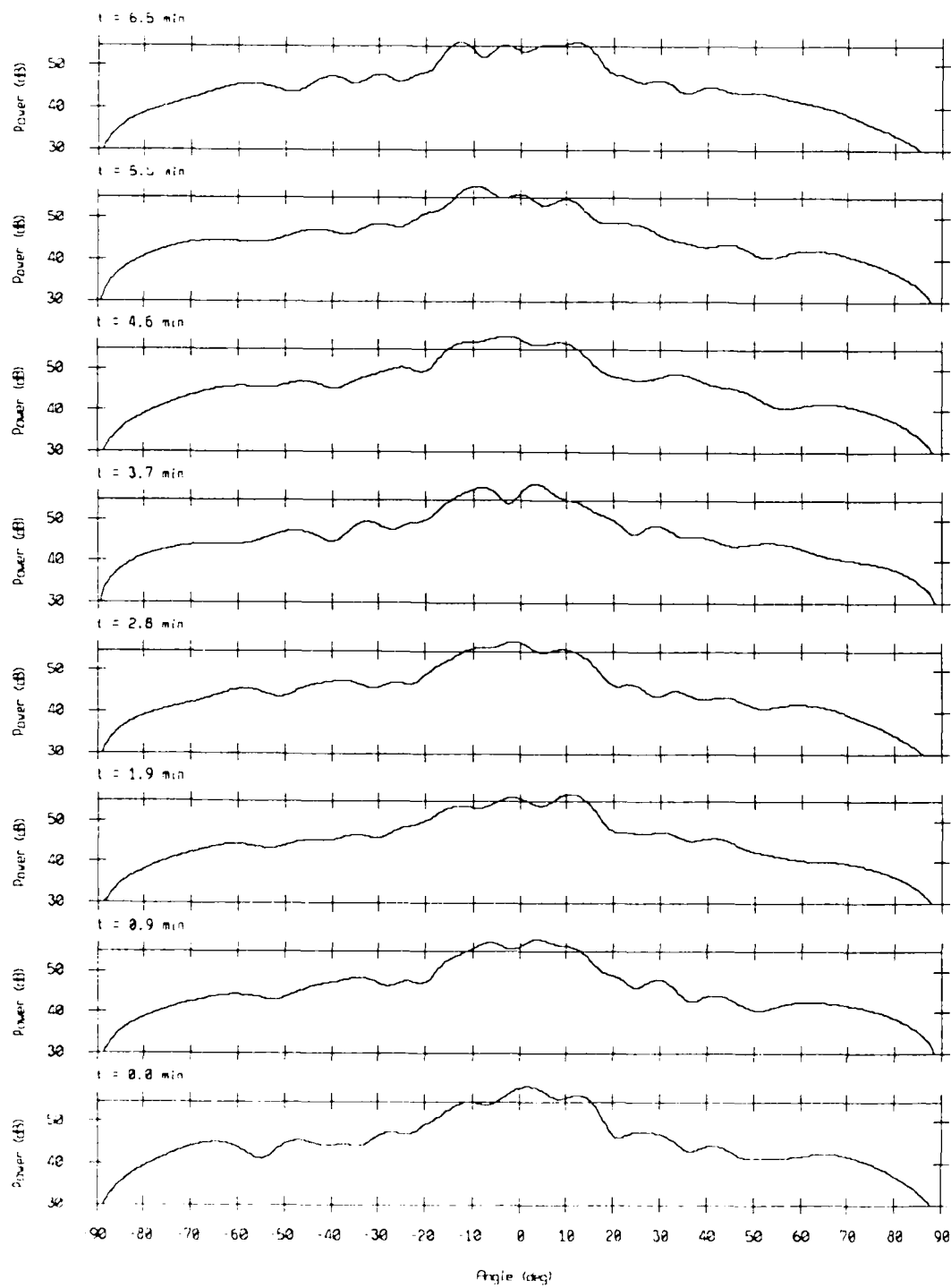
$f = 100$  Hz, rect window





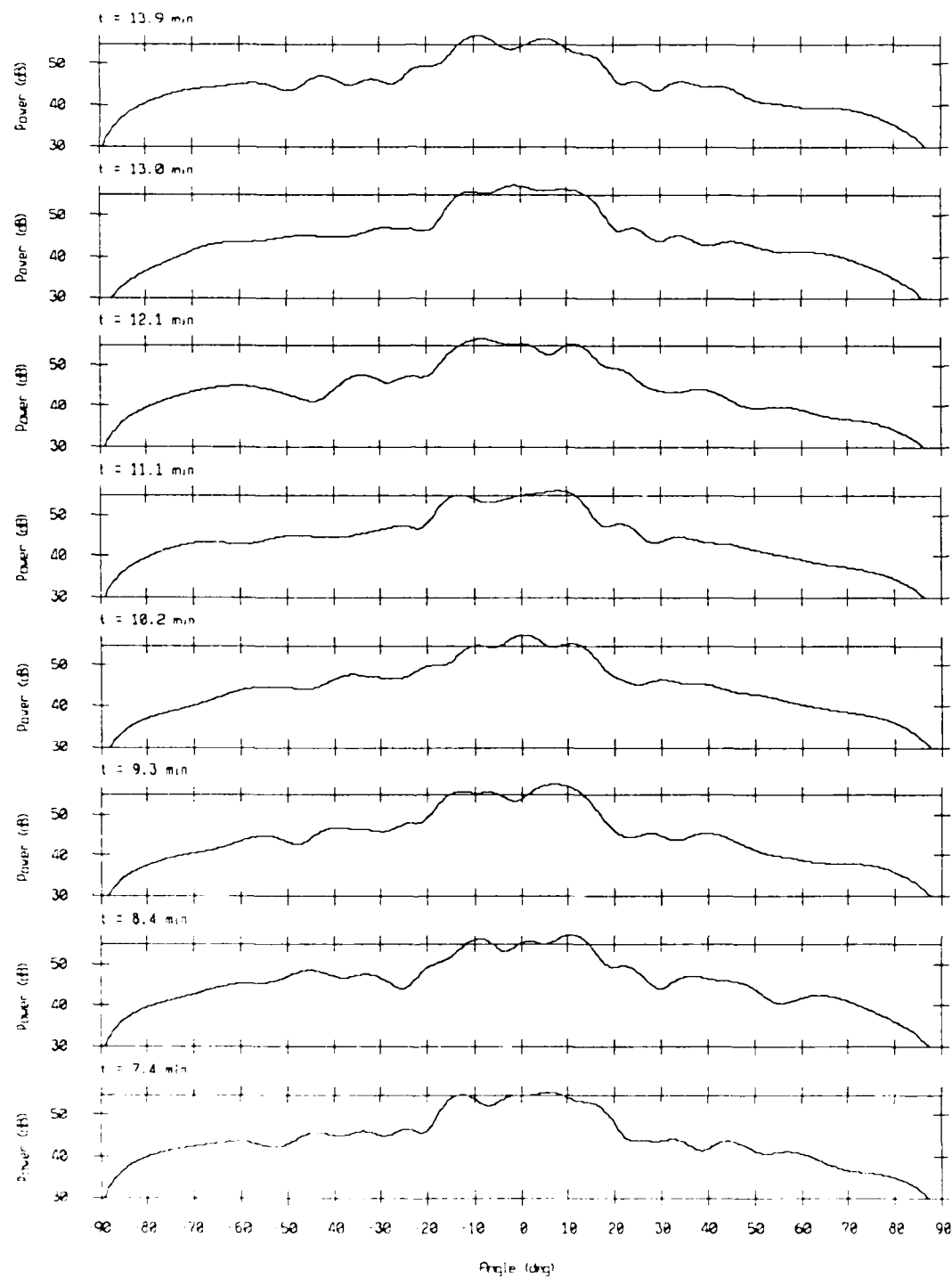
Array Response - 86247 Bin #4967

$f = 125$  Hz, rect window



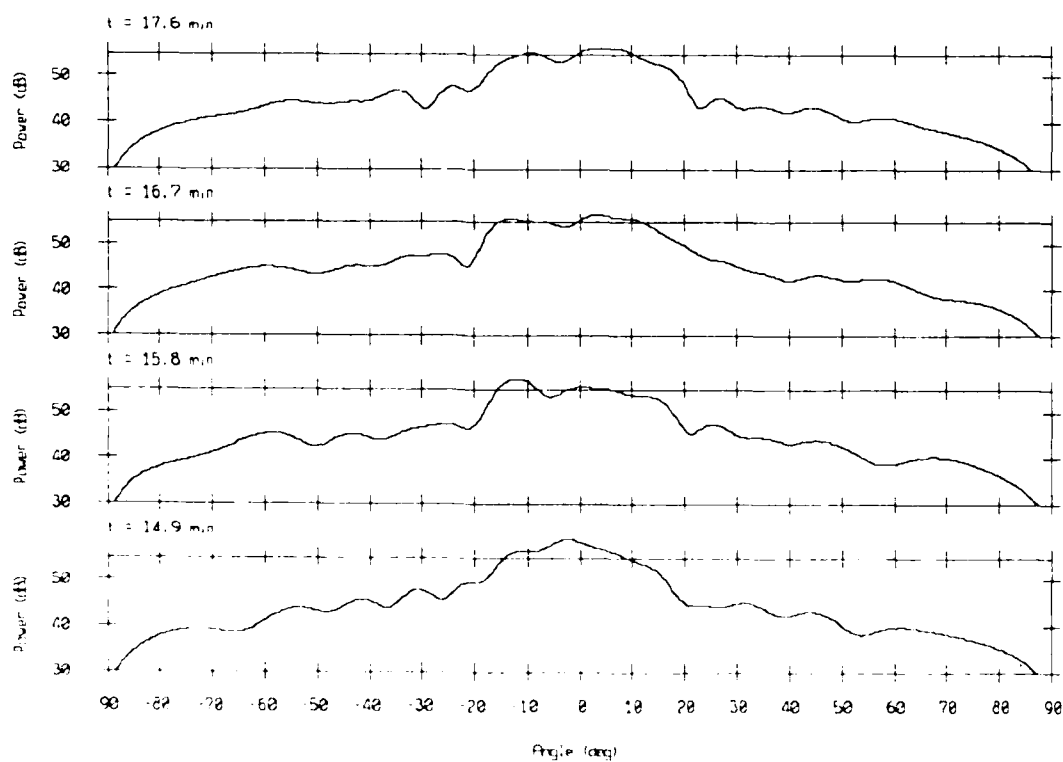
# Array Response - 86247 Bin #4967

$f = 125$  Hz, rect window



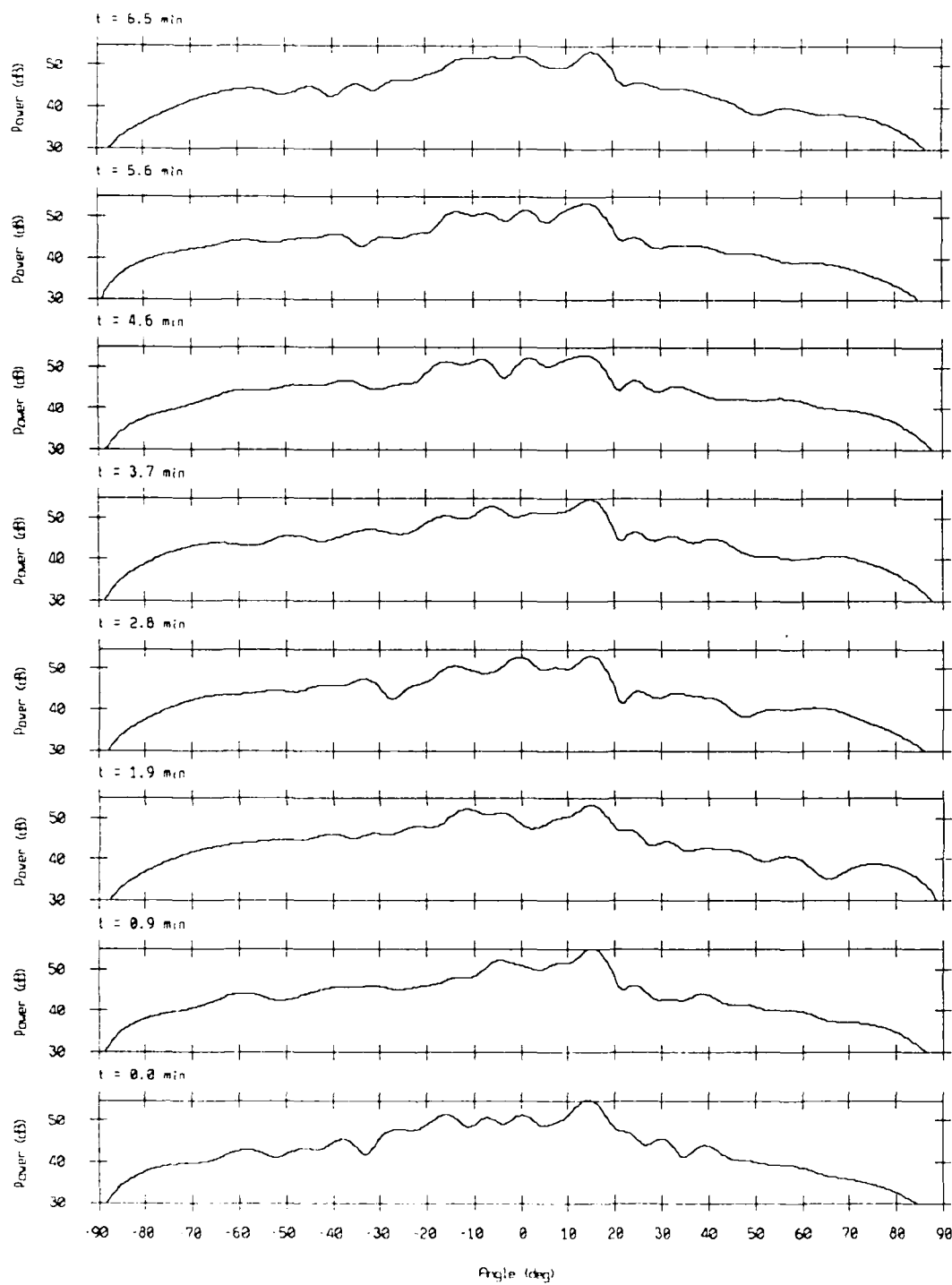
Array Response - 86247 Bin #4967

$f = 125$  Hz, rect window



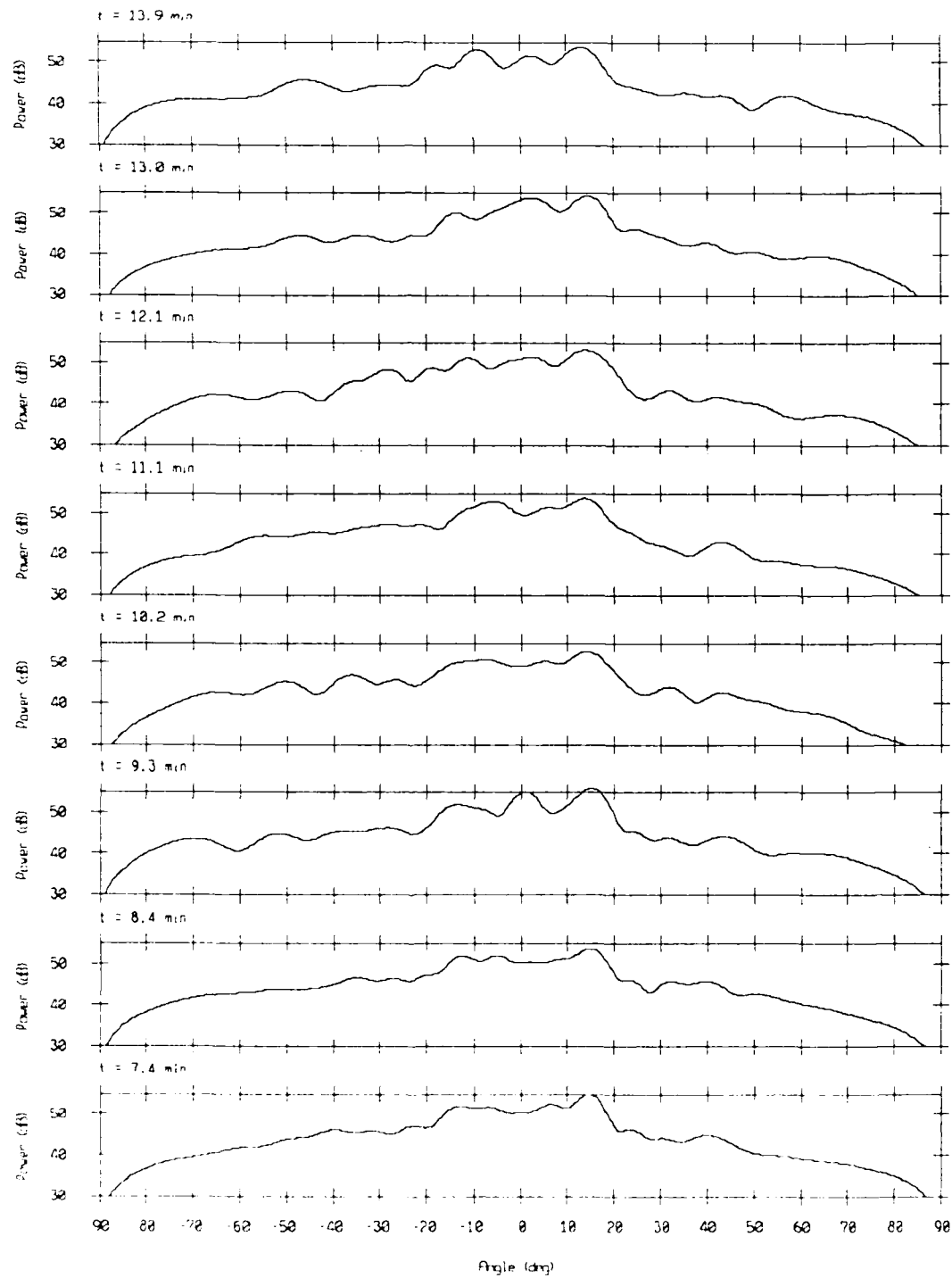
Array Response - 86247 Bin #5141

$f = 150$  Hz, rect window



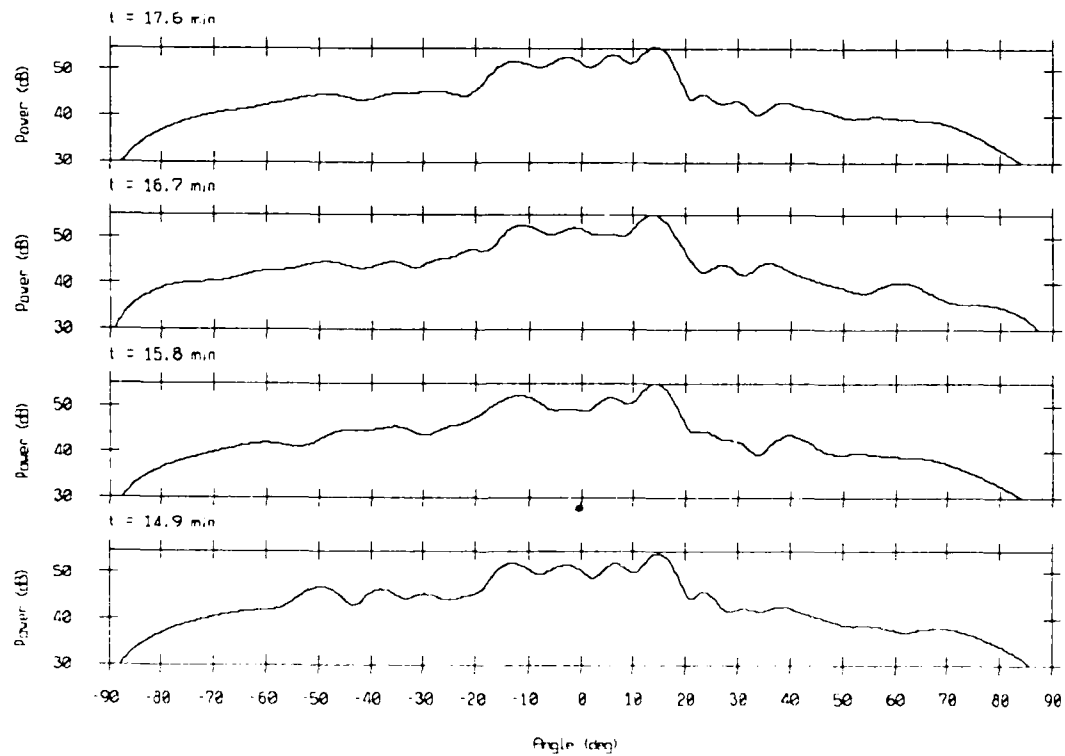
Array Response - 86247 Bin #5141

$f = 150$  Hz, rect window



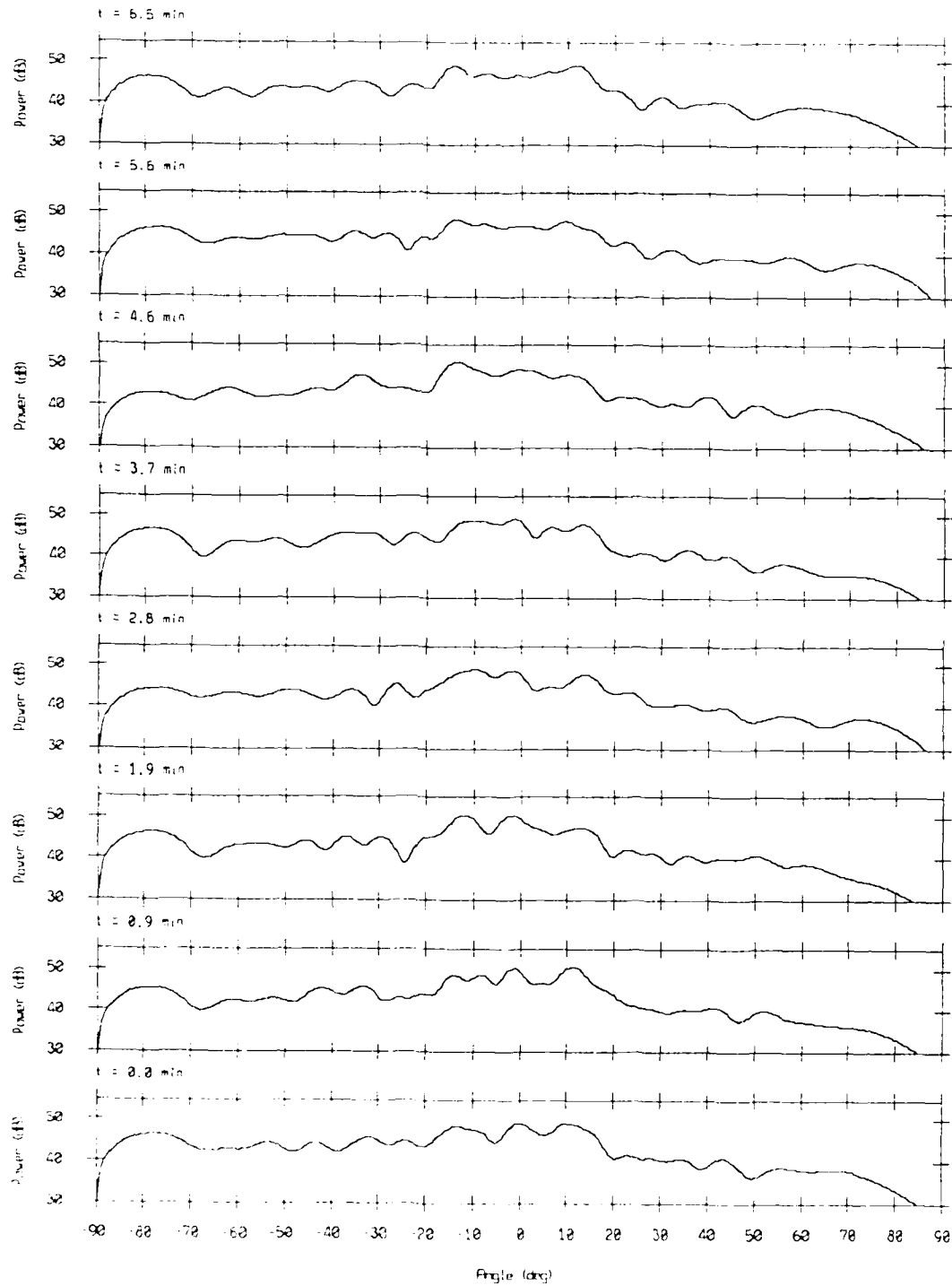
Array Response - 86247 Bin #5141

$f = 150$  Hz, rect window



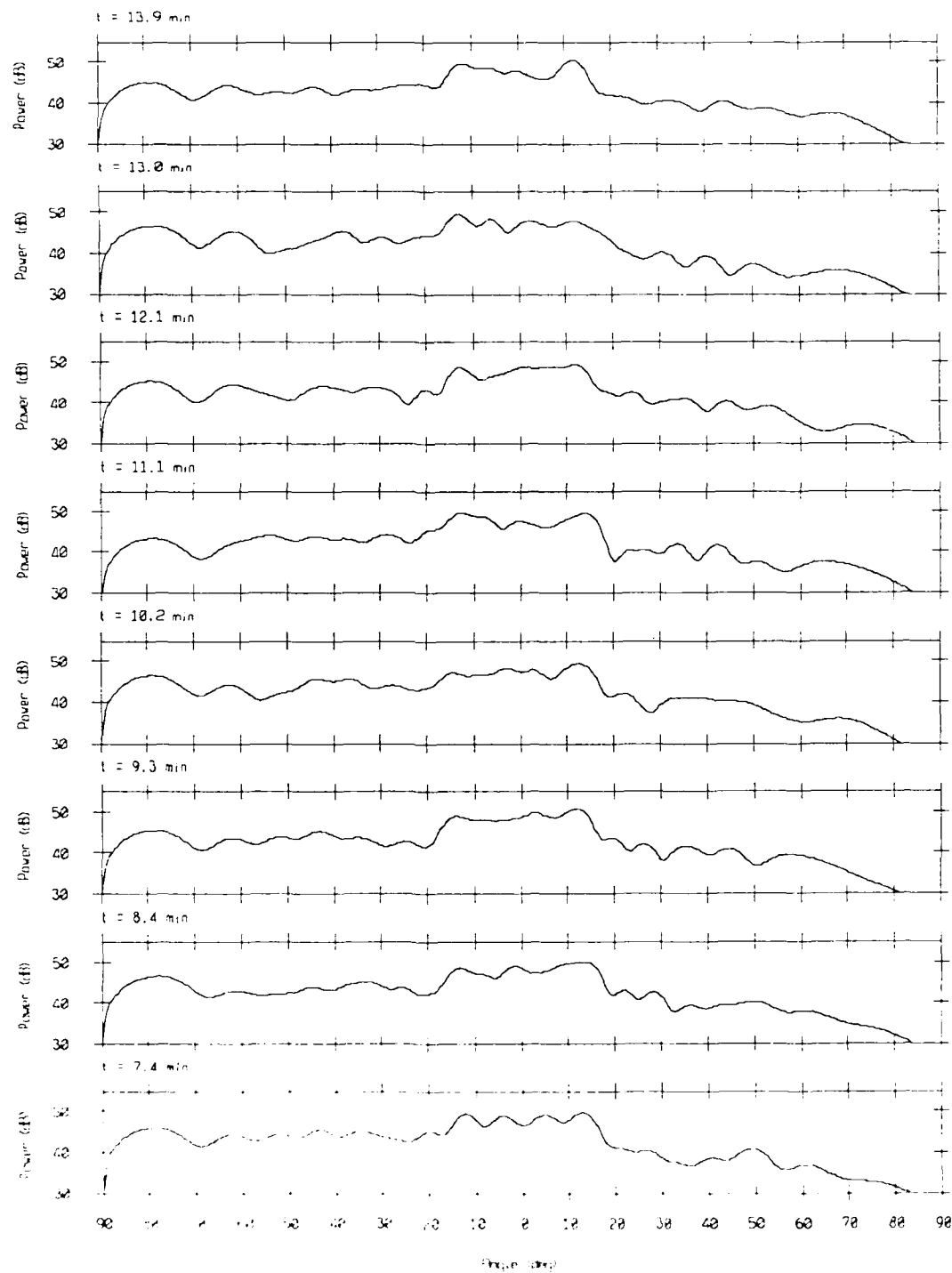
Pinray Response - 86247 3In #5316

$f = 175$  Hz, next window



Array Response - 86247 Bin #5316

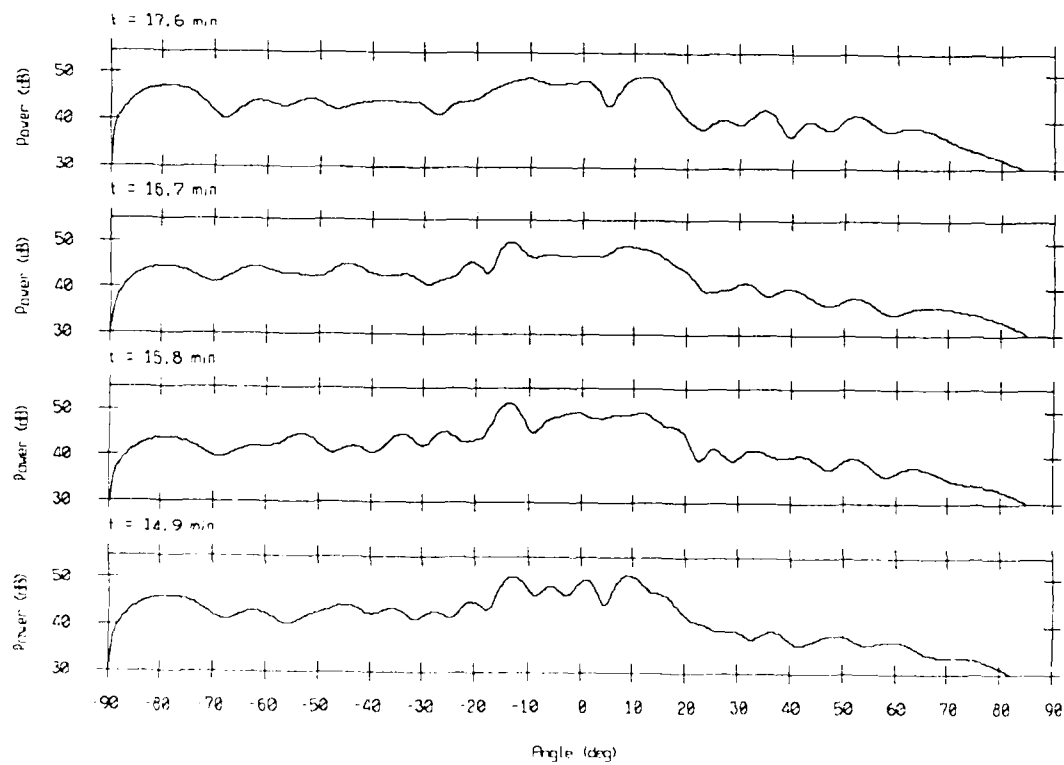
$f = 175$  Hz, rect window





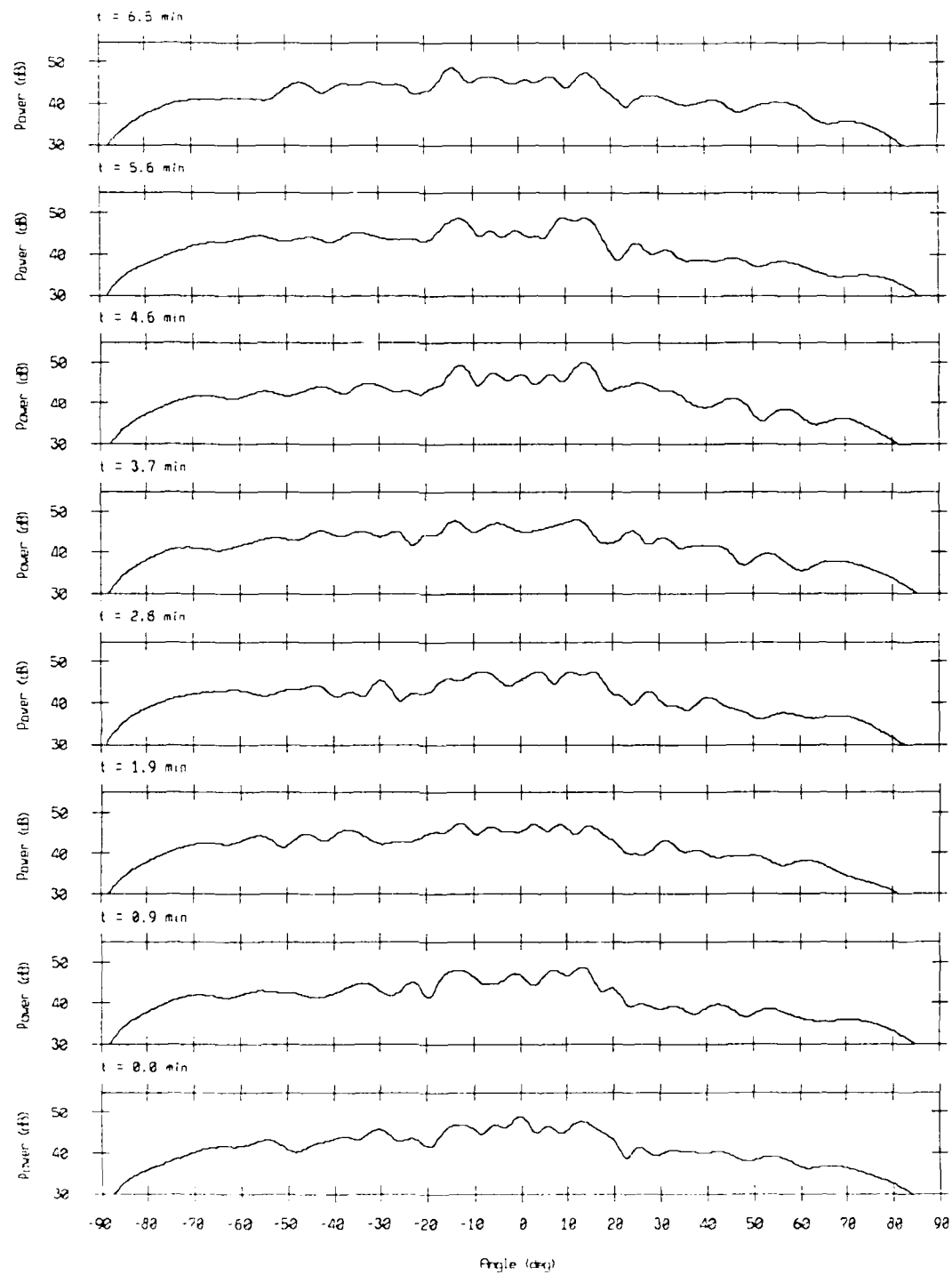
Array Response - 86247 Bin #5316

$f = 175$  Hz, rect window



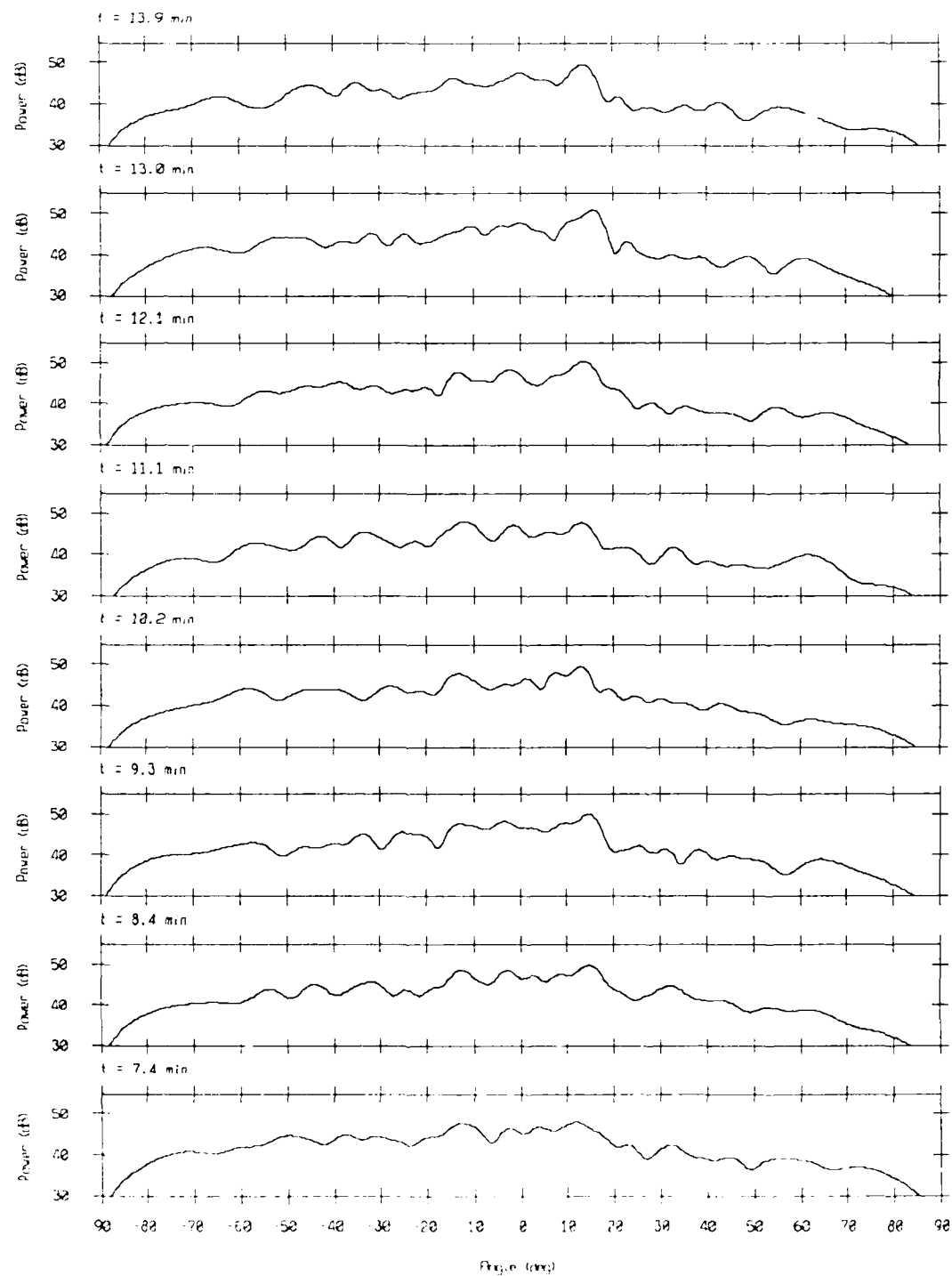
Array Response - 86247 Bin #5490

$f = 200$  Hz, rect window



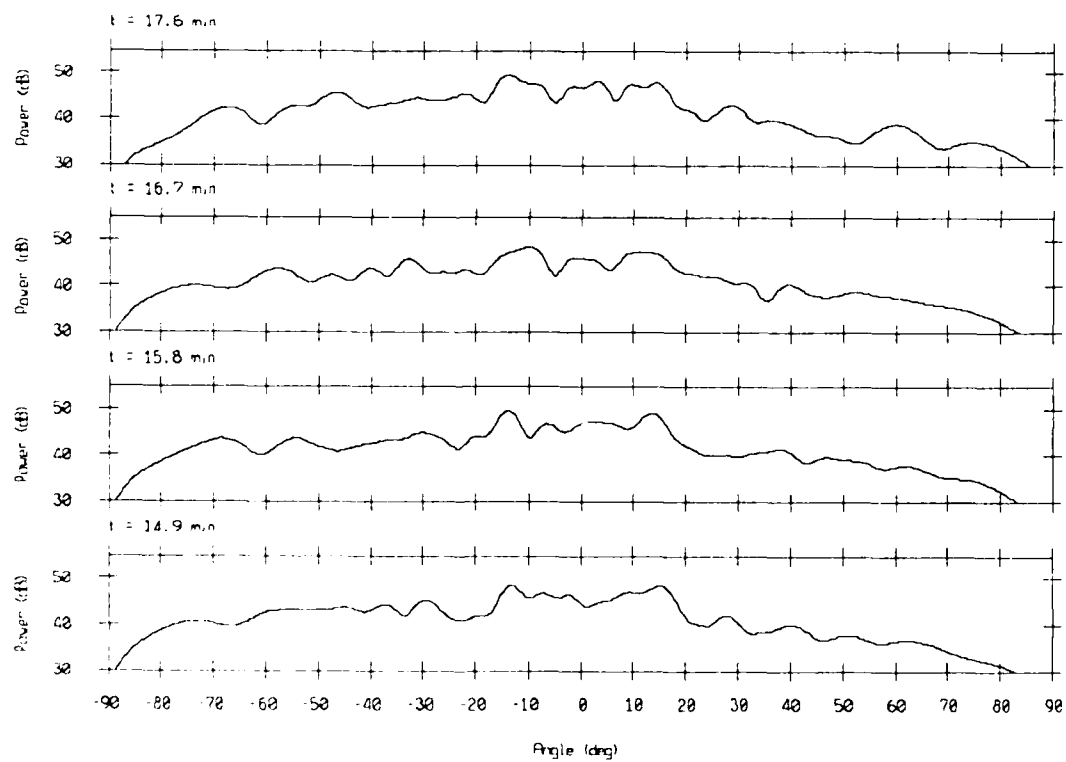
Array Response - 86247 Bin #5490

$f = 200$  Hz, rect window



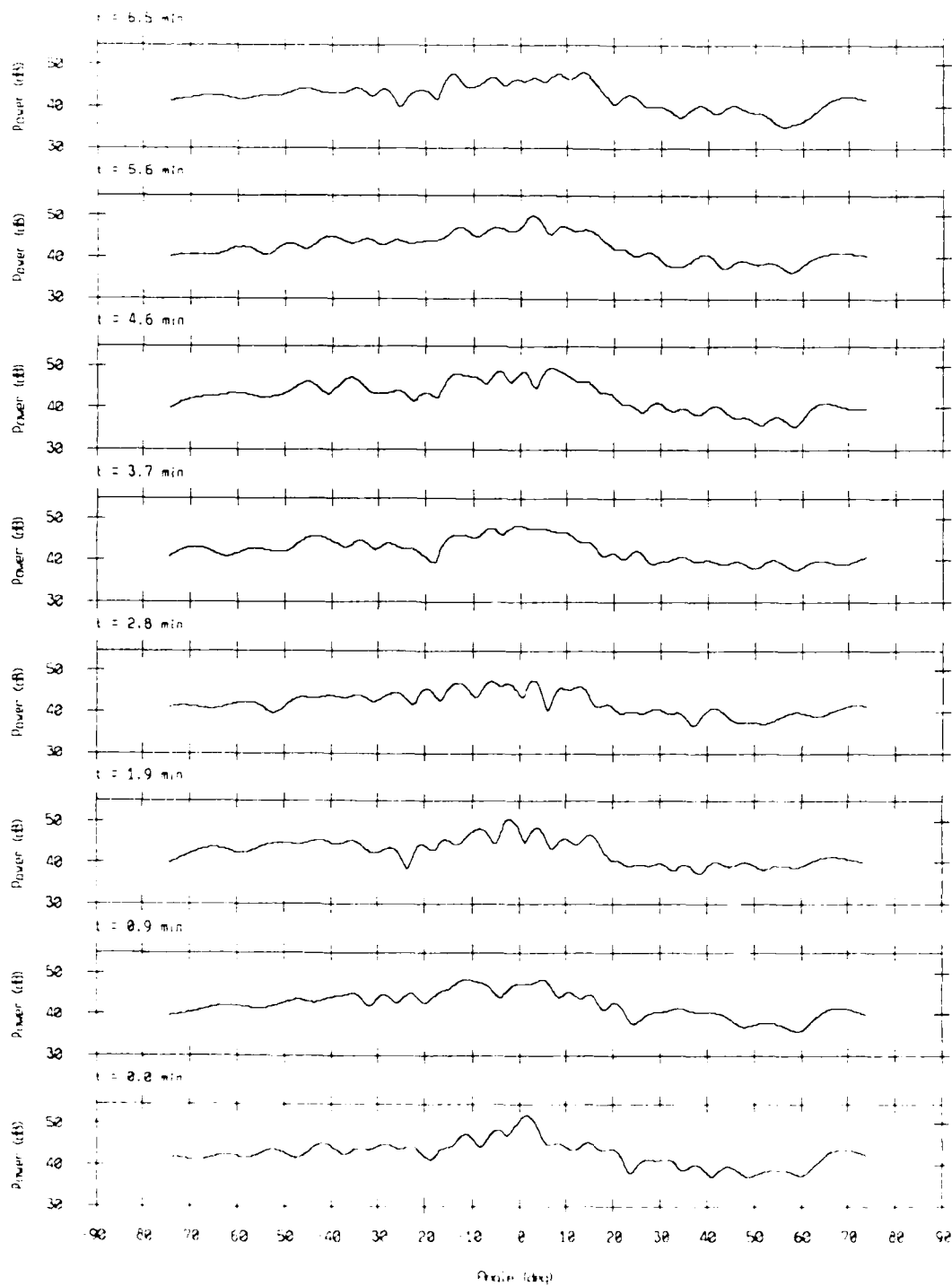
Array Response - 86247 Bin #5490

$f = 200$  Hz, rect window



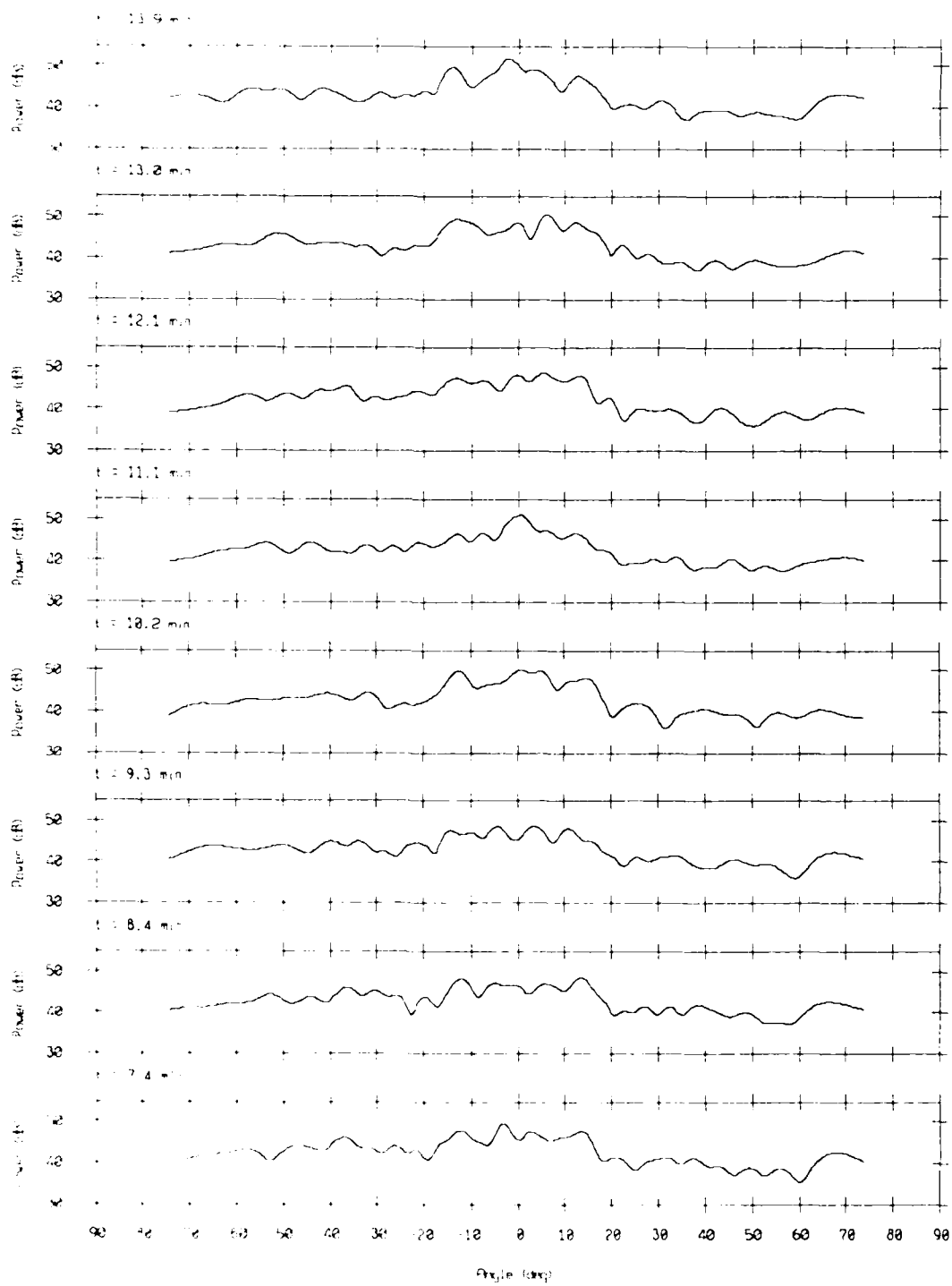
Pinny Response - 86247 Bin #5664

$f = 225$  Hz, rect window



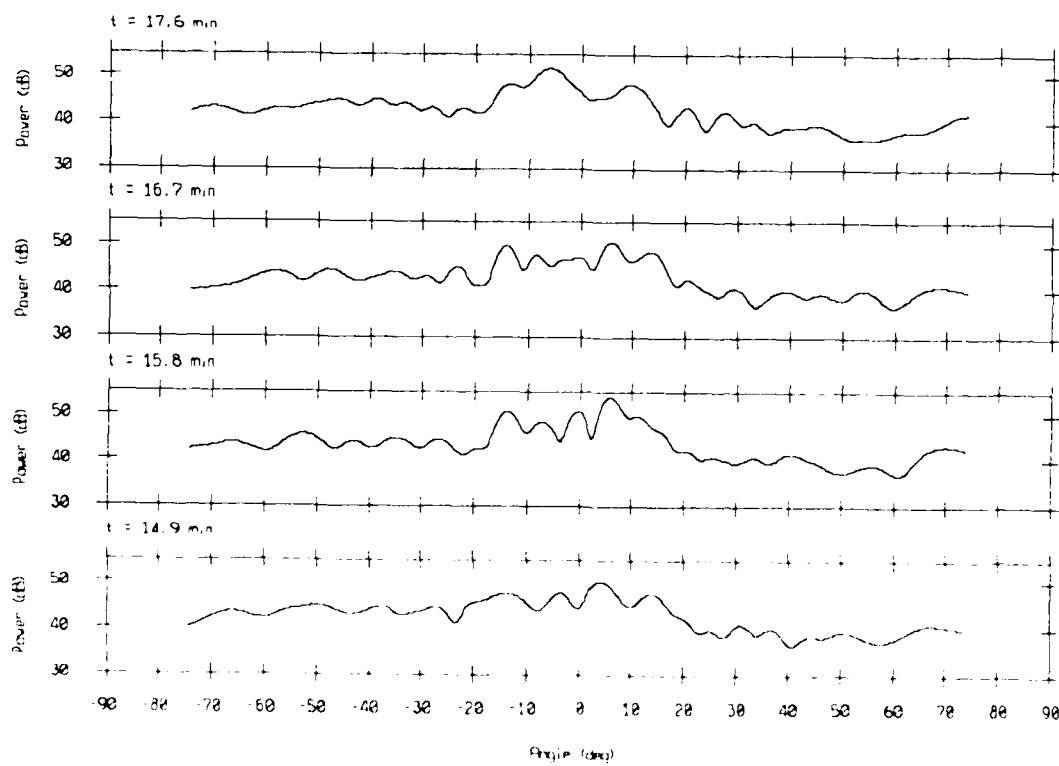
Rad. Response - 86247 Bin #5664

$f = 225$  Hz, next window



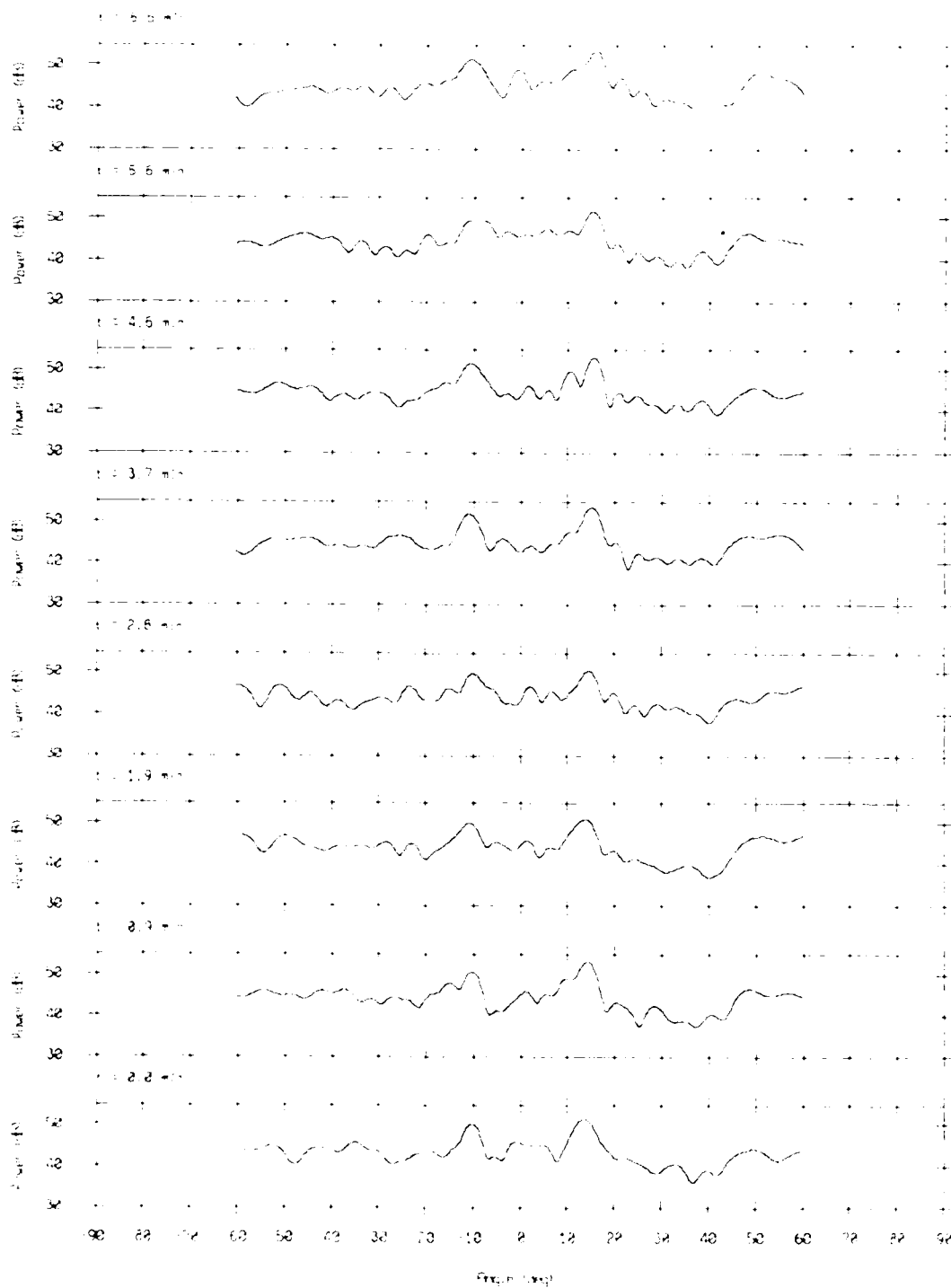
Grind Response - 86247 Bin #5664

$f = 225$  Hz, rect window



Binary Resonance 0021951 #10330

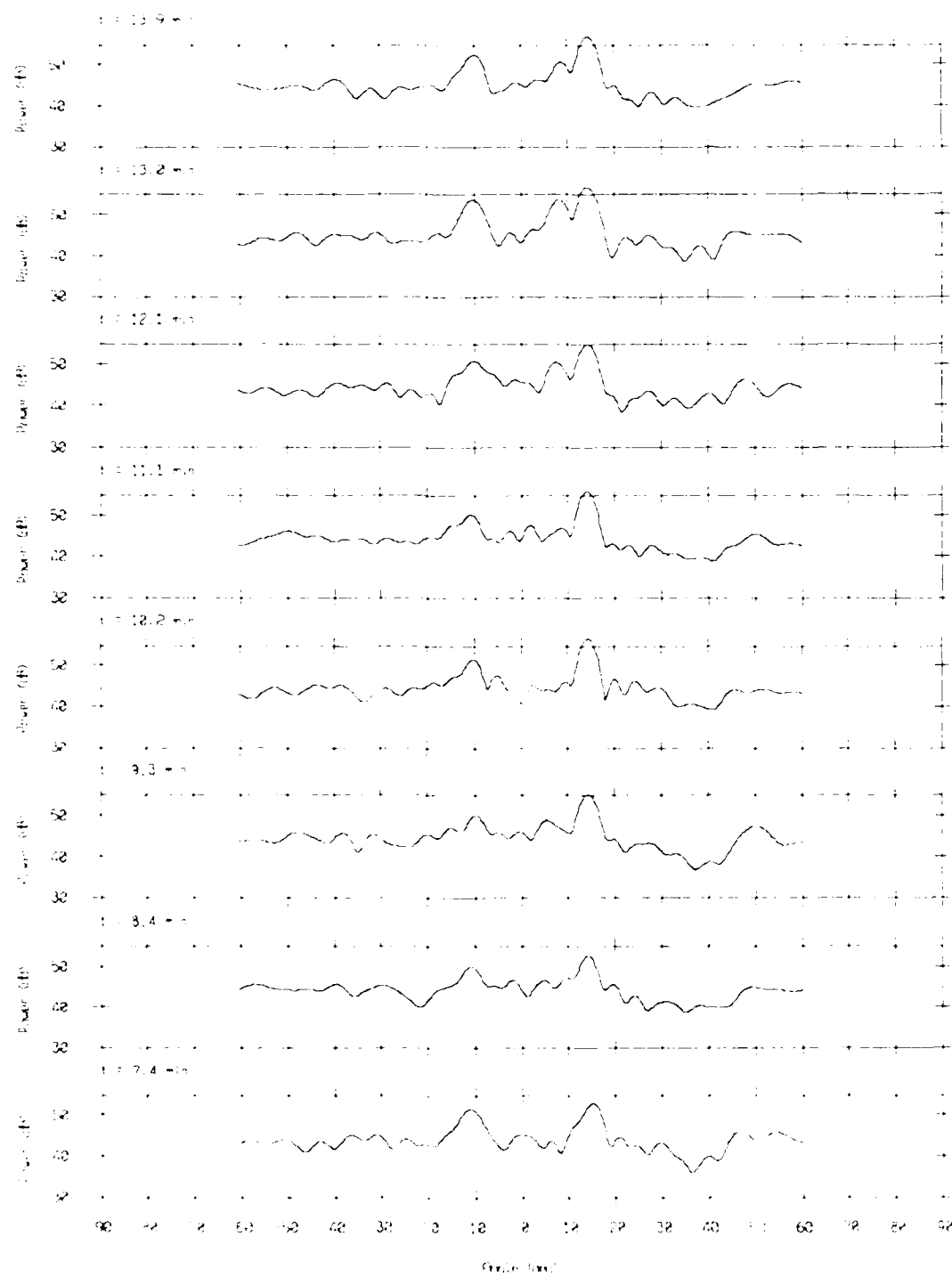
$f = 250$  Hz, quiet window





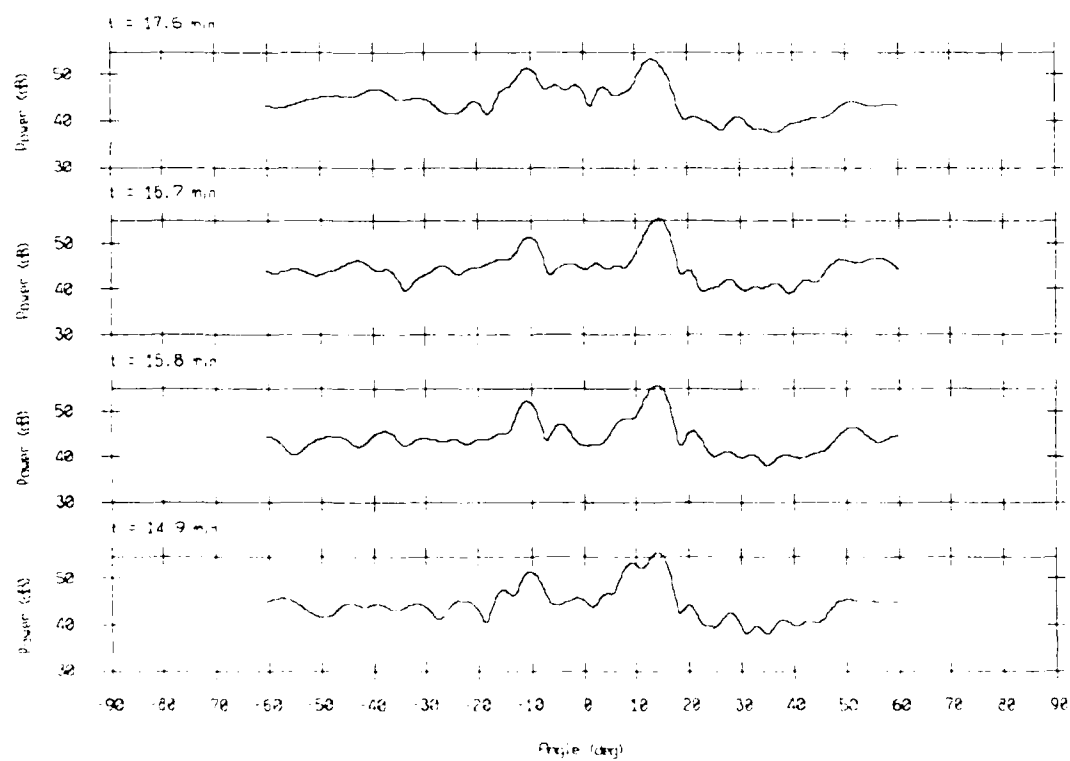
Primary Receiver ID - 8004737 #5833P

F 260 Hz, next window



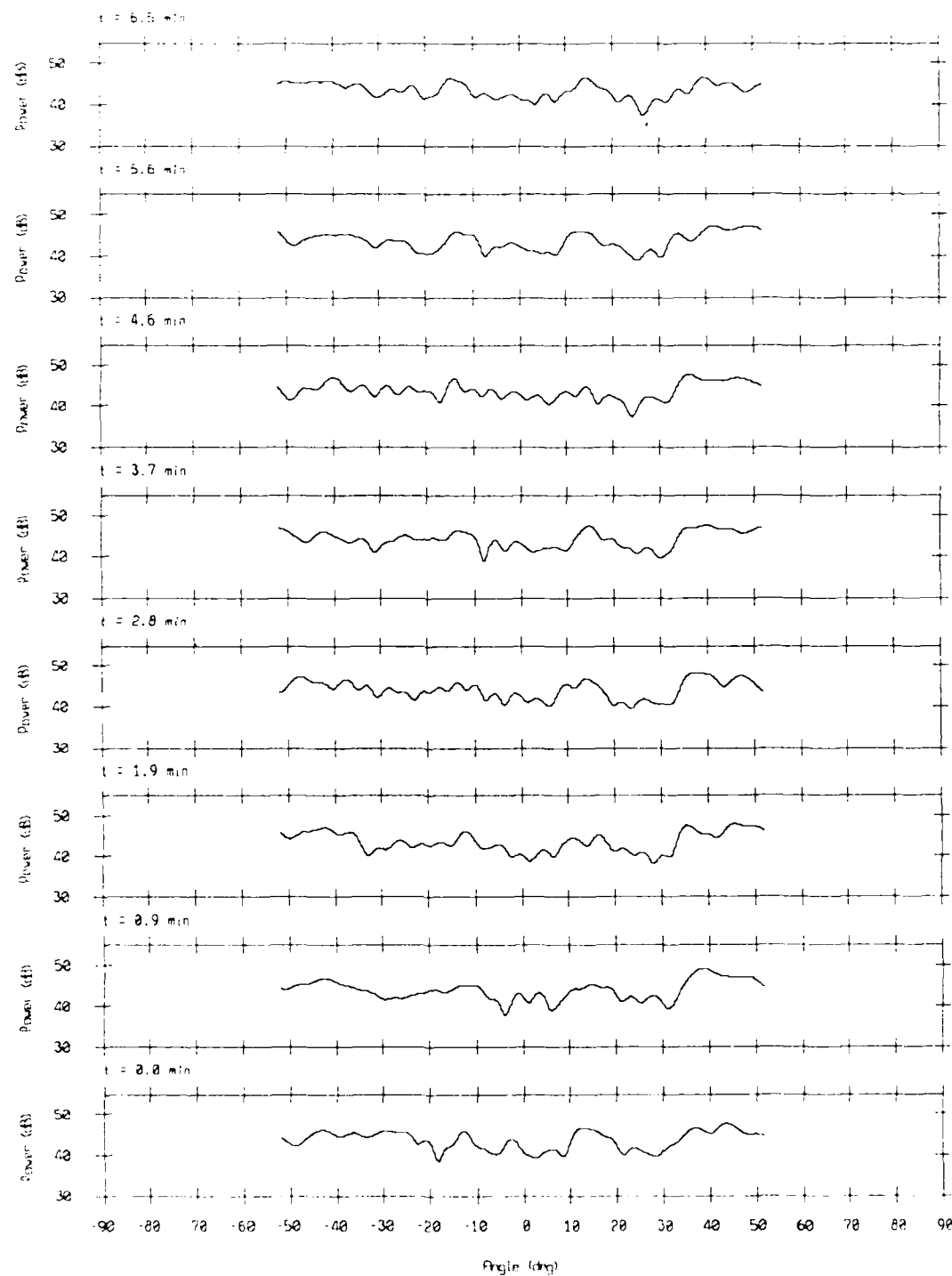
Acoustic Response - 86247 Bin #5832

$f = 250$  Hz, next window



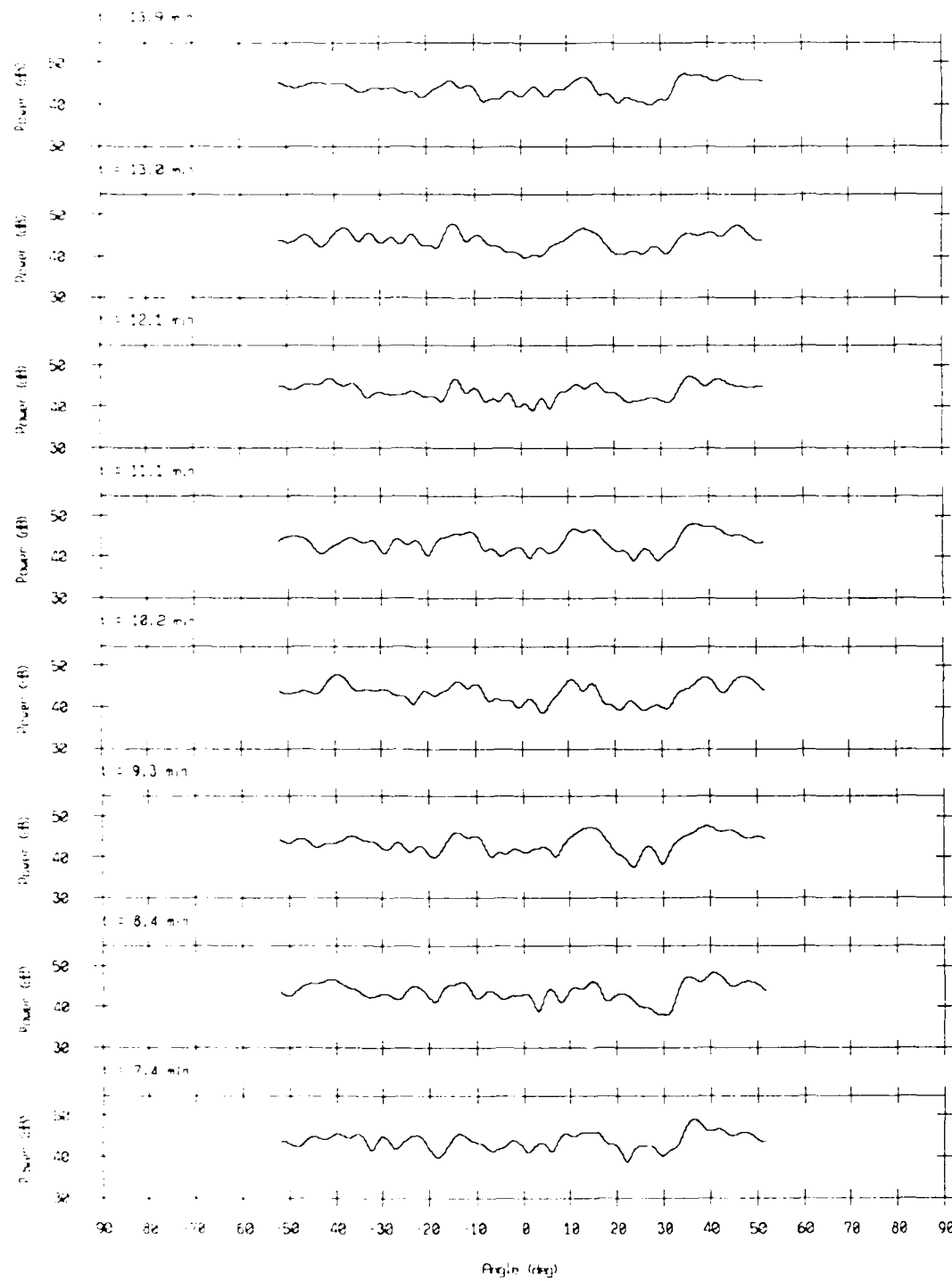
Power Response - 86247 Bin #6012

$f = 275$  Hz, rect window



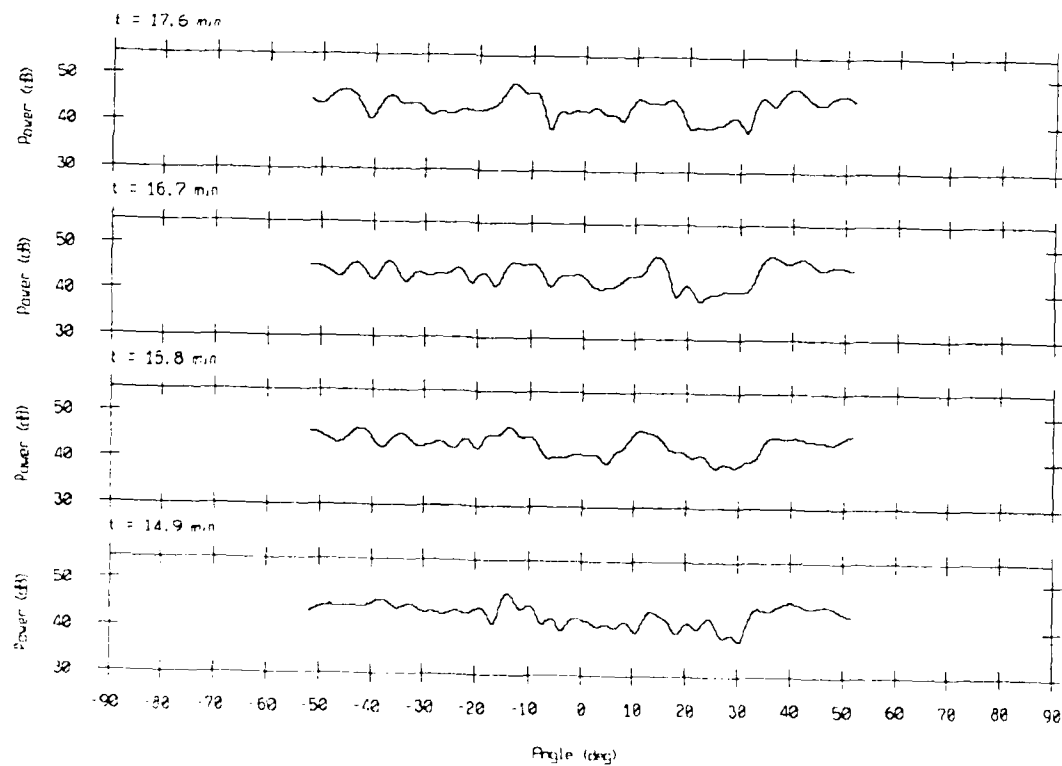
Acoustic Response - 86247 Bin #6012

$f = 275$  Hz, next window



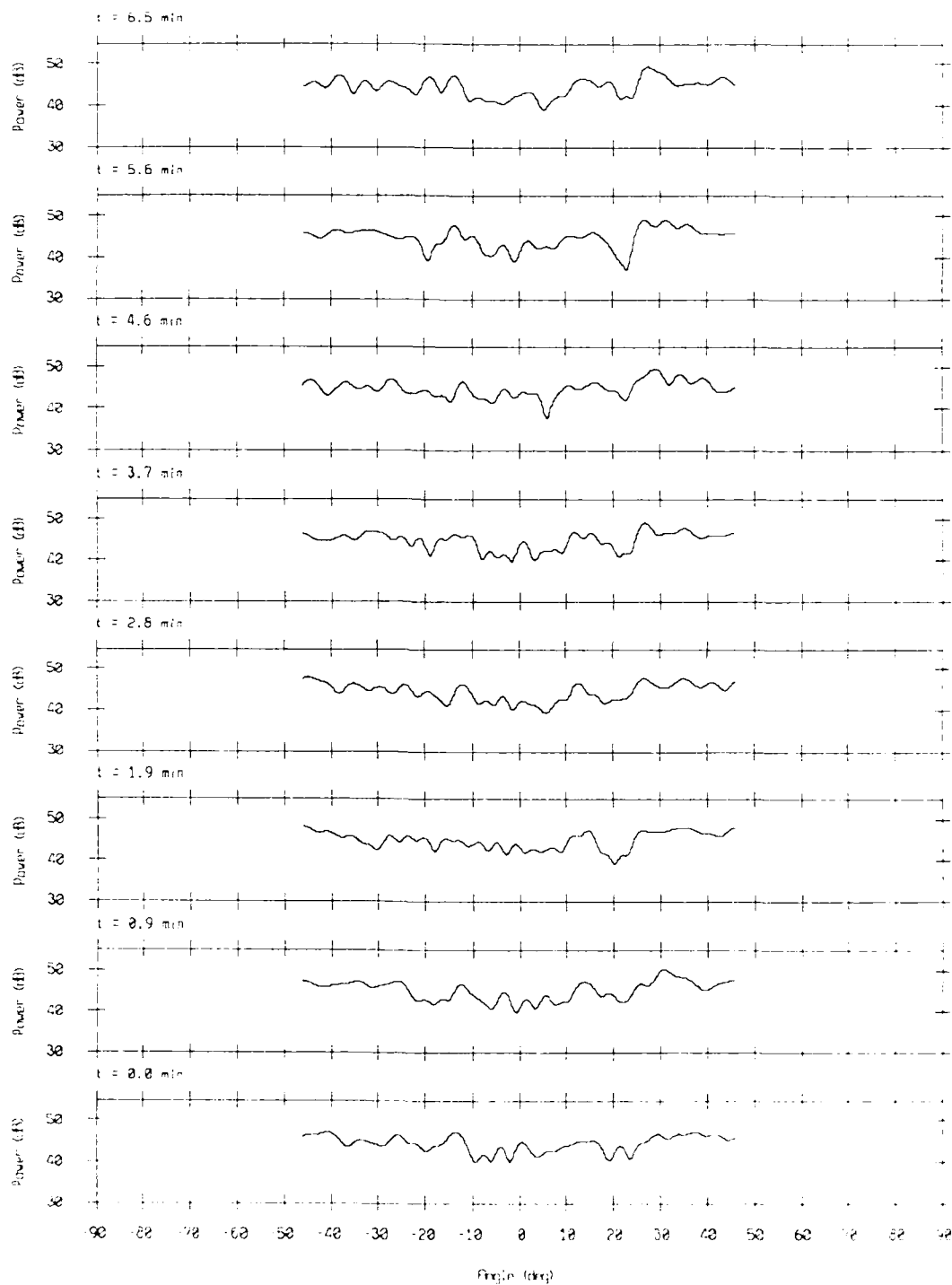
Array Response - 86247 Bin #6012

$f = 275$  Hz, next window



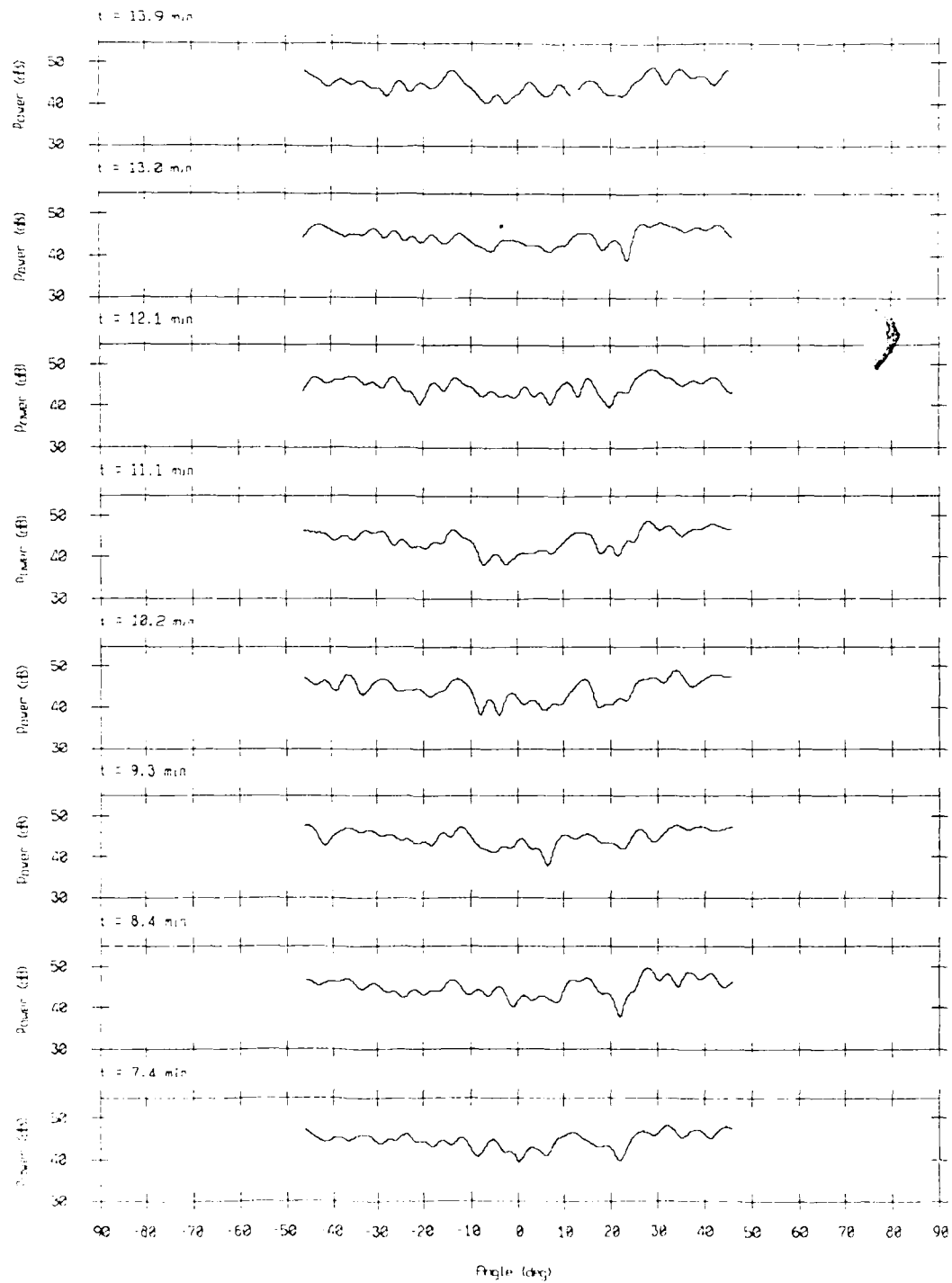
Brady Response - 86247 Bin #6186

$f = 300$  Hz, rect window



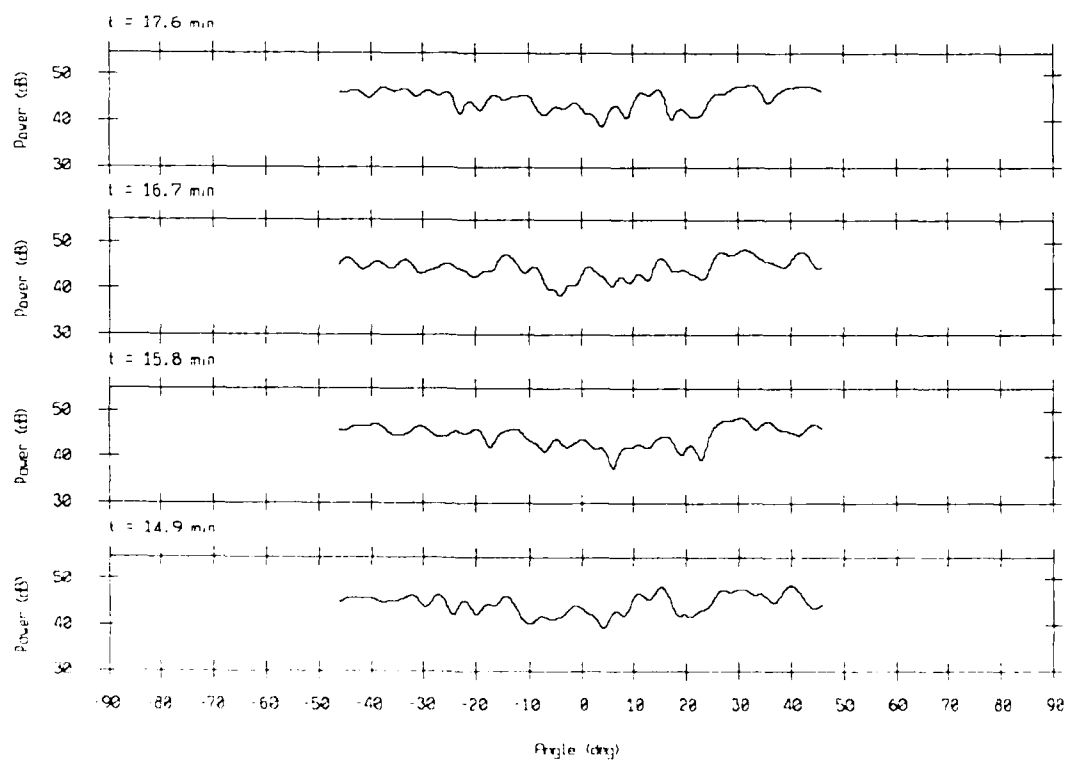
Array Response - 86247 Bin #6186

$f = 320$  Hz, next window



Array Response - 86247 Bin #6186

$f = 320$  Hz, rect window





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